

## Cumulative Subject Index<sup>1</sup>

Volumes 109–114

### A

- Acetaldehyde  
 formation by ethylene oxidation over SiO<sub>2</sub>-supported molten-salt Wacker catalysts, analysis, **114**, 377  
 oxidation on ZnO catalysts, alkyl elimination, relevance to allylic oxidation pathways, **113**, 497
- Acetic acid  
 and methyl acetate, in vapor-phase reaction of methanol in presence of oxygen with V/Ti/P binary phosphate catalyst, **112**, 194
- Acetone  
 hydrogenation over Pt catalysts, metal-support effects, **113**, 52  
 synthesis from ethanol over MO (*M* = Ca, Mn, Zn) promoted Fe<sub>2</sub>O<sub>3</sub> catalysts, **109**, 298
- Acidity  
 AlPO<sub>4</sub><sup>-5</sup> catalysts, effects of thermal, hydrothermal, and acid-base treatments, **111**, 254  
 mordenite, ion-exchanged  
     characterization by temperature-programmed desorption of pyridine, **112**, 495  
     IR spectroscopic study, **112**, 505  
 surface, AlPO<sub>4</sub> catalysts precipitated with NH<sub>4</sub>OH, effect of starting Al salt, **111**, 106  
 unsupported and SiO<sub>2</sub>-supported V<sub>2</sub>O<sub>5</sub>, MoO<sub>3</sub>, and TiO<sub>2</sub> catalysts, pyridine adsorption study, **112**, 66  
 WO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> and ultrastable faujasite catalysts, comparison, **111**, 286
- Acids  
 solid, neopentane cracking, mechanism, **110**, 171
- Acid sites  
 mordenites, strength distribution, differential scanning calorimetry, **113**, 490  
 surface, acid-modified SiO<sub>2</sub>-MgO, thermometric titration, **111**, 227  
 ZSM-5 zeolites, modification by steaming, IR analysis, **110**, 404
- Acrolein  
 oxidation on ZnO catalysts, alkyl elimination, relevance to allylic oxidation pathways, **113**, 497
- Activity-yield/selectivity relationships  
 in heterogeneous catalysts, structure sensitivity analysis, **114**, 277
- Adsorption  
 1,3-butadiene onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303  
 1-butene onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303
- CO  
 activated sites and CO-H surface complex on Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, detection, **113**, 444  
 onto Co particles obtained from Co<sub>2</sub>(CO)<sub>8</sub> deposition on MgO and SiO<sub>2</sub>, IR spectroscopic study, **113**, 466  
 and H<sub>2</sub> onto La<sub>2</sub>O<sub>3</sub>-promoted Rh/SiO<sub>2</sub> catalysts, **109**, 61  
 onto Pd/SiO<sub>2</sub> catalysts, electronic competition effect, **109**, 120  
 onto slightly hydrated (Fe, Cr)<sub>3</sub>O<sub>4</sub> catalysts, differential pressure and FAB MS studies, **109**, 347  
 Co<sub>2</sub>(CO)<sub>8</sub> onto MgO and SiO<sub>2</sub> in Co particle formation, surface properties, analysis by IR spectroscopy of CO adsorption, **113**, 466  
 -desorption processes, CO over NaX zeolite and supported Ru catalysts, **113**, 398  
 furan onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303  
 2,5*H*-furanone onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303  
 helium over NaA zeolites, analysis, **113**, 540  
 maleic anhydride onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303  
 methanol  
     onto Fe(110), Auger electron spectroscopic study, **109**, 314  
     onto H-ZSM-5 zeolites, formation of stoichiometric complexes, analysis, **114**, 34  
 2-methyl-2-propanol onto H-ZSM-5 zeolites, formation of stoichiometric complexes, analysis, **114**, 34  
 NH<sub>3</sub> onto heteropoly compounds, IR spectroscopic study, **114**, 469  
 nitrogen over NaA zeolites, apparent abnormal values, analysis, **113**, 540  
 O<sub>2</sub> onto Ag-Pt alloys, analysis, **109**, 170  
 phosphomolybdates on γ-Al<sub>2</sub>O<sub>3</sub>, NMR study, **109**, 163  
 2-propanol onto H-ZSM-5 zeolites, formation of stoichiometric complexes, analysis, **114**, 34  
 propene onto V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub> catalysts, associated reducibility of V(V) ions, effect of Na, **114**, 473  
 pyridine, in analysis of SiO<sub>2</sub>-supported V<sub>2</sub>O<sub>5</sub>, MoO<sub>3</sub>, and TiO<sub>2</sub> catalyst acidities, **112**, 66  
 water purifier with *in situ* photocatalytic regeneration, description, **113**, 549

<sup>1</sup> Boldface numbers indicate appropriate volume; lightface numbers indicate pagination.

- Aerosil**  
support of Rh–Cu catalysts, preparation and activity for alkane reactions, **111**, 374
- AES**, *see* Auger electron spectroscopy
- Agglomeration**  
reductive, Rh/Al<sub>2</sub>O<sub>3</sub> crystallites, CO-induced, effect of NO, **112**, 183
- Aging**  
thermal, Pt/Al<sub>2</sub>O<sub>3</sub>, temperature-programmed desorption spectroscopy, **110**, 285
- Alcohols**  
catalytic conversion, impact of inductive effect for secondary alcohol dehydration, **110**, 416  
higher, synthesis over CuO/ZnO catalysts, relationship to methanol synthesis, **111**, 445  
synthesis  
from carbon oxides and hydrogen over Zn–Mn–Cr–K-oxide catalysts, **111**, 120  
direct, on K-promoted Cu–Co/ZnO–Al<sub>2</sub>O<sub>3</sub> catalysts, analysis, **114**, 447
- Aldol condensation**  
V–Ti binary phosphate catalyzed, effects of organic compounds used in catalyst preparation, **113**, 562
- Alkanes**  
hydrogenolysis on metallic Mo/Al<sub>2</sub>O<sub>3</sub> catalysts, **113**, 567
- Alkylation**  
shape-selective, benzene with propylene over H-ZSM-5 zeolites to produce cumene, **109**, 212  
toluene with methanol over ZSM-5 zeolites, **114**, 17
- Alkyl elimination**  
from aldehydes on ZnO, relevance to allylic oxidation pathways, **113**, 497
- Alloys**  
Cu–Mn, oxidation, in design and preparation of planar models of hopcalite oxidation catalysts, **113**, 267  
Pt gauzes, etching of, surface area measurement, **113**, 475
- Allyl alcohol**  
liquid-phase hydrogenation and isomerization on Rh/AlPO<sub>4</sub> catalysts, **113**, 172
- Alumina**, *see* Aluminum oxide
- Aluminum**  
–Cu mixed oxide catalyst, Cab-O-Sil-supported, selective chemisorption of NH<sub>3</sub> and NO, **109**, 25  
–Cu polynuclear complex as model mixed oxide catalyst, isomerization activity, **110**, 364  
deficient zeolites, characterization, **110**, 82  
inclusions and precipitates in restacked exfoliated MoS<sub>2</sub> catalysts, properties, **112**, 418  
promotion of iron catalyst, high-pressure kinetics of NH<sub>3</sub> synthesis, microscopic model, **110**, 1  
–Si ratio, effect on secondary reactions during CO hydrogenation on zeolite-supported metal catalysts, **110**, 47
- Aluminum chloride**  
effect on surface and acid properties of AlPO<sub>4</sub> catalysts precipitated with NH<sub>4</sub>OH, **111**, 106
- Aluminum nitrate**  
effect on surface and acid properties of AlPO<sub>4</sub> catalysts precipitated with NH<sub>4</sub>OH, **111**, 106
- Aluminum oxide**  
carbon-covered, as support for sulfide catalysts, evaluation, **114**, 291  
catalysts, methylphenothiazine cation formation, effect of Cu<sup>2+</sup>, **112**, 579  
–Cu–ZnO catalysts, methanol synthesis, mechanism, **109**, 263  
and MgO, support of Ni catalysts, carbon filament growth, model, **109**, 241  
–SiO<sub>2</sub> catalysts  
isobutane cracking, mechanism, **112**, 565  
methylphenothiazine cation formation, effect of Cu<sup>2+</sup>, **112**, 579  
in study of small aliphatic carbenium ion stability, NMR spectroscopy, **114**, 167  
SiO<sub>2</sub>-stabilized, resistance to V attack under severe high-temperature conditions, **111**, 450  
and SiO<sub>2</sub>, support of  
Rh carbonyl catalysts, generation and characterization under mild conditions, **110**, 96  
Ru catalysts, role in benzene hydrogenation, **111**, 429  
support of  
Ag catalysts, sintering in various chemical environments, **109**, 100  
Co catalysts, CO hydrogenation, independent effects of particle size and reduction extent, **113**, 544  
Co–Mo hydrodesulfurization catalysts, Co–K edge in oxide and sulfided states, structure determination by EXAFS, **113**, 281  
Fe catalysts  
carbon methanation and chain growth pathways during Fischer–Tropsch synthesis, **113**, 13  
hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317  
Ir catalysts  
isomerization of labeled hexanes, correlations between product distributions and catalyst structure, EXAFS study, **114**, 153  
surface chemistry during preparation, laser Raman spectroscopy, **113**, 164  
Ir–Co catalysts, isomerization of labeled hexanes, correlations between product distributions and catalyst structure, EXAFS study, **114**, 153  
K–Co–Mo water–gas shift catalysts, laser Raman and IR studies of oxidic precursors, **112**, 93  
Mo catalysts  
active sites, characterization, **113**, 569  
sulfidability and hydrodesulfurization, analysis, **112**, 516

- Mo(CO)<sub>6</sub> catalysts, surface properties, **114**, 347
- Mo metallic catalysts, alkane hydrogenolysis, **113**, 567
- MoO<sub>3</sub> catalysts reduced in H<sub>2</sub> at elevated temperatures, surface chemistry, **113**, 82
- Ni catalysts
- CO-H<sub>2</sub> reaction, isotopic study of chain growth, **110**, 354
  - hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317
  - methanation of CO-H<sub>2</sub> mixtures, transient IR and isotopic study, **112**, 135
- Ni-Mo catalysts, thiophene hydrodesulfurization, poisoning by nitrogen compounds, **110**, 375
- Pd catalysts
- active sites, determination by CS<sub>2</sub> titration, letter to editor, **110**, 203; reply, **110**, 206
  - hydrogenation of but-1-yne, mechanism, **114**, 411
  - irreversible H transfer in cyclohexene disproportionation, kinetic and mechanistic study, **111**, 397
- Pt catalysts
- crystallite migration as sintering mechanism, **109**, 433
  - irreversible H transfer in cyclohexene disproportionation, kinetic and mechanistic study, **111**, 397
  - passivating oxidation of Pt, **114**, 354
  - surface chemistry during preparation, laser Raman spectroscopy, **113**, 164
  - thermal aging, temperature-programmed desorption spectroscopy, **110**, 285
- Pt-Ir catalysts, surface chemistry during preparation, laser Raman spectroscopy, **113**, 164
- Pt-Re and Pt-Rh catalysts in first stages of preparation, drying, and calcination, EXAFS studies, **110**, 209
- Rh-Au catalysts, effects on metal-metal interaction, **111**, 41
- Rh carbonyl catalysts, generation and characterization under mild conditions, **110**, 96
- Rh catalysts
- CO-H<sub>2</sub> reaction, effect of support on catalytic performance, kinetic study, **110**, 159
  - CO, NO, and CO + NO behavior, IR spectroscopic study, **109**, 89
  - CO oxidation, autonomous oscillations, **110**, 197
  - effects of Ce addition on CO oxidation kinetics, **112**, 543
  - interaction with H<sub>2</sub> and O<sub>2</sub>, **112**, 201
  - promoter effects on CO-induced Rh structural changes, IR analysis, **110**, 413
- Rh crystallites, CO-induced disruption, effect of NO, **112**, 183
- Ru catalysts, CO activated adsorption sites and CO-H surface complex, detection, **113**, 444
- sintered Pt, Rh, and Pt/Rh catalysts, redispersion, **109**, 407
- small Pt particles, temperature-programmed desorption of CO and H<sub>2</sub>, **110**, 191
- sulfided Mo catalysts, effect on catalytic activity and properties, **110**, 275
- vanadium oxide-promoted Ru catalysts, secondary ion mass spectrometry, **110**, 410
- V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub> catalysts, adsorption of 1-butene, 1,3-butadiene, furan, 2,5H-furanone, and maleic anhydride, **109**, 303
- WO<sub>3</sub> catalysts, X-ray photoelectron and ion scattering study, **110**, 139
- surface basicity, characterization by microcalorimetry and FTIR spectroscopy of adsorbed hexafluoroisopropanol, **109**, 378
- TiO<sub>2</sub> composite, point of zero charge, effect of dopant concentration, **114**, 433
- transition, thermal stabilization by structural coherence with LnAlO<sub>3</sub> (Ln = La, Nd, Pr), analysis, **114**, 112
- ZnO, support of
- Cu catalysts
    - Cs-doped, methanol and C<sub>2</sub> oxygenate synthesis, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
    - water-gas shift reaction, comparison with Cr<sub>2</sub>O<sub>3</sub>-promoted Fe<sub>3</sub>O<sub>4</sub> catalysts, **112**, 325  - CuO catalysts, ethanol formation from synthesis gas, mechanism, **114**, 90
  - K-promoted Cu-Co catalysts, direct synthesis of alcohols, **114**, 447
- α-Aluminum oxide{0001}
- support of Rh catalysts, NO on, temperature-programmed desorption study, **113**, 185
- γ-Aluminum oxide
- adsorption of phosphomolybdates, NMR study, **109**, 163
- SiO<sub>2</sub>, support of reduced MoO<sub>3</sub> catalysts, ethane homologation, **109**, 221
- support of
- Mo catalysts, CO<sub>2</sub> and NO chemisorption, application in catalyst surface structure analysis, **113**, 307
  - MoS<sub>2</sub> catalysts
    - isoprene hydrogenation, active site identification, **109**, 320
    - thiophene hydrodesulfurization, effect of phosphorus poisoning, **112**, 401  - NiMo presulfided catalysts, vapor-phase catalytic hydrodeoxygenation of benzofuran, **111**, 243
  - Pd catalysts containing CeO<sub>2</sub>, characterization, **114**, 23
  - Pt catalysts, regeneration by hydrogen of coked reforming catalysts, role of chlorine, **111**, 235

- Pt, Pt-Re, and Pt-Re-S reforming catalysts, effect of coke deposition on stability, **112**, 357
- reduced MoO<sub>3</sub> catalysts, ethane homologation, **109**, 221
- Ru catalysts
- containing partial monolayers of adsorbed sulfur, hydrogenation and hydrodesulfurization, **112**, 229
  - prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
- sulfided MoM and M (M = Co, Cr, Fe, Ir, Ni, Pd, Pt, Re, Rh, Ru) catalysts, C-N bond hydrogenolysis selectivity, promoter effects, **113**, 206
- sulfided NiO-MoO<sub>3</sub> catalysts
- hydrodenitrogenation of benzo(*f*)quinoline and benzo(*h*)quinoline, **112**, 411
  - hydrogenation of substituted benzenes and phenols, **112**, 12
- sulfided Ru catalysts, hydrogenation and hydrodesulfurization, effect of surface phase behavior on catalyst activity and selectivity, **112**, 250
- WO<sub>3</sub> catalysts, acidity comparison with ultra-stable faujasite catalysts, **111**, 286
- unmodified and KOH-doped, support of Mo(CO)<sub>6</sub>-derived Mo catalysts, CO oxidation with N<sub>2</sub>O, **111**, 50
- $\eta$ -Aluminum oxide
- support of Pt catalysts, acetone hydrogenation, metal-support effects, **113**, 52
- Aluminum phosphate
- AlPO<sub>4</sub><sup>-5</sup> catalysts
- crystalline molecular sieve, sorption properties, **111**, 23
  - structural stability and surface and catalytic properties: effects of thermal, hydrothermal, and acid-base treatments, **111**, 254
- AlPO<sub>4</sub><sup>-11</sup> catalysts
- conversion of 1-butene to aromatics, **110**, 150
  - propene and ethene conversion, **113**, 263
- catalysts precipitated with NH<sub>4</sub>OH, surface and acid properties, effect of starting Al salt, **111**, 106
- support of Rh catalysts, liquid-phase hydrogenation and isomerization of  $\alpha,\beta$ -unsaturated alcohols, **113**, 172
- Aluminum sulfate
- effect on surface and acid properties of AlPO<sub>4</sub> catalysts precipitated with NH<sub>4</sub>OH, **111**, 106
- Aminonitriles
- hydrogenation to dinitriles over Rh/MgO catalysts, catalyst preparation and characterization, **112**, 145
- Ammonia
- adsorption onto
    - heteropoly compounds, IR spectroscopy, **114**, 469
    - $\gamma$ -Mo<sub>2</sub>N catalysts, NMR spectroscopy, **112**, 556
  - decomposition over 430-SS etched metal catalysts, **112**, 590
  - desorption-diffusion in molecular sieves, temperature-programmed desorption study: application to partially decationated Y-zeolites, **112**, 444
  - selective chemisorption on Cab-O-Sil-supported Cu-M (M = Al, Cr, Fe) mixed oxide catalysts, **109**, 25
  - in selective reduction of
    - NO over V<sub>2</sub>O<sub>5</sub>/SiO<sub>2</sub> mixed gel catalysts, analysis, **111**, 273
    - N<sub>2</sub>O over V<sub>2</sub>O<sub>5</sub>/SiO<sub>2</sub>-TiO<sub>2</sub> catalysts, analysis, **114**, 313
  - synthesis
    - over Fe single-crystal surfaces, effects of K, **109**, 51
    - high-pressure kinetics, microscopic model, **110**, 1
    - on promoted and unpromoted Fe catalysts, structure sensitivity, **114**, 457
    - zeolite system, desorption-diffusion in molecular sieves, temperature-programmed desorption study: theory, **112**, 437
- Ammonium hydroxide
- in precipitation of AlPO<sub>4</sub> catalysts, effect of starting Al salt on catalyst surface and acid properties, **111**, 106
- Ammonolysis
- oxidative, toluene over MoO<sub>3</sub> catalysts, associated catalytic anisotropy, **114**, 332
- Anatase, *see* Titanium dioxide, anatase
- Aniline
- oxidative carbonylation over Pd/C catalysts, effects of promoters, solvents, and reaction conditions, **114**, 246
- Annealing
- internal silanol groups in ZSM-5 zeolites by steaming, letter to editor, **104**, 484; comment, **109**, 470
- Antimony
- doping of Pt/TiO<sub>2</sub> catalysts, effect on performance, **113**, 106
- Antimony oxide
- Sn oxide catalysts dispersed on SnO<sub>2</sub>, structure and activity for propene oxidation, **109**, 423
- $\alpha$ -Antimony oxide
- K-doped bulk and SiO<sub>2</sub>-supported catalysts, oxidative coupling of methane, **112**, 168
- Aromatization
- n*-hexane over ZnO-H-ZSM-5 catalysts, mechanism, **114**, 284
- Arsenic
- AsMo<sub>12</sub>O<sub>40</sub> heteropolyanions, electronic structure and reduction behavior, **111**, 336
- ASC whetlerite
- deactivation mechanisms, **112**, 267
- Auger electron spectroscopy
- adsorption and decomposition of methanol on Fe(110), **109**, 314
  - oxidative and reductive properties of Pt/TiO<sub>2</sub> catalysts, **109**, 226

## Autoemission control

- CO and propene oxidation by iron oxide catalysts, **110**, 298

## B

## Barium hydroxide

- catalysts in organic reactions, effect of microcrystalline structure and nature of active sites on catalytic activity, **112**, 528

## Basicity

- surface, oxides, characterization by microcalorimetry and FTIR spectroscopy of adsorbed hexafluoroisopropanol, **109**, 378

## Benzene

- alkylation with propylene over H-ZSM-5 zeolites to produce cumene, **109**, 212

- in  $\text{AlPO}_4^{5-}$ , sorption capacity, isotherms, and thermodynamics, **111**, 23

- and CO, coadsorption on

- Pd/SiO<sub>2</sub> catalysts, **110**, 18

- Rh/SiO<sub>2</sub> catalysts, **110**, 18

- effects on *n*-hexane hydroisomerization over Pt/mordenite catalysts, **111**, 425

## hydrogenation

- over H-Y zeolites loaded with nickel and molybdenum sulfides, analysis, **114**, 388

- over MgO-, SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>-, and graphite-supported Ru catalysts, role of support, **111**, 429

- methylation, ethylation, and propylation with methanol over H-ZSM-5 zeolites, **114**, 271

- oxidation over vanadium oxide catalysts, evaluation, **113**, 334

- in sequestration test for reaction intermediates in methanol conversion to gasoline over H-ZSM-5 zeolites, **110**, 310

- substituted, hydrogenation over sulfided NiO-MoO<sub>3</sub>/γ-Al<sub>2</sub>O<sub>3</sub> catalysts, role of electronic and steric factors, **112**, 12

- synthesis from 1-butene over  $\text{AlPO}_4^{11}$ , **110**, 150

## Benzofuran

- vapor-phase catalytic hydrodeoxygenation over NiMo/γ-Al<sub>2</sub>O<sub>3</sub> presulfided catalysts, **111**, 243

Benzo(*f*)quinoline

- hydrodenitrogenation over sulfided NiO-MoO<sub>3</sub>/γ-Al<sub>2</sub>O<sub>3</sub> catalysts, **112**, 411

Benzo(*h*)quinoline

- hydrodenitrogenation over sulfided NiO-MoO<sub>3</sub>/γ-Al<sub>2</sub>O<sub>3</sub> catalysts, **112**, 411

Benzo[*b*]thiophene, *see* Thianaphthene

## Bicarbonate

- in aqueous solution, heterogeneous catalytic hydrogenation to  $\text{HCO}_2^-$ , **110**, 184

## Bifunctional catalysts

- 1-methyl-2-ethylbenzene reactions as test, **110**, 348

- Pt/Ω-zeolite, preparation and properties, **114**, 321

## Bismuth

- Bi<sup>3+</sup>, and Bi<sup>3+</sup> + Fe<sup>3+</sup> ions, MoO<sub>3</sub>-supported model catalysts, propene oxidation kinetics, **114**, 196

## Blank reactors

- for correction in oxidative methane dehydrogenation studies, **111**, 317

## Bond-order-conservation method

- in analysis of CO hydrogenation over Ni, Pd, and Pt catalysts, **113**, 341

## Book reviews

- Isotopic Assessment of Heterogeneous Catalysis. J. Happel, 1986, **114**, 206

- Metal-Support Interactions in Catalysis, Sintering and Redispersion. S. A. Stevenson, J. A. Dumescic, R. T. K. Baker, and E. Ruckenstein (Eds.), 1987, **112**, 599

- Pulse Methods in 1D and 2D Liquid-Phase NMR. W. S. Brey (Ed.), 1988, **114**, 482

- Synthesis of High-Silica Aluminosilicate Zeolites. P.A. Jacobs and J.A. Martens, 1987, **110**, 427

## Brønsted acid sites

- location in H-ZSM-5 zeolites, effect of chemisorbed molecules, **114**, 186

## 1,3-Butadiene

- adsorption onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303

- hydrogenation on Pt single crystals, effects of surface structure and K and Na addition, **112**, 21

- oxidation, activity and selectivity of Mo crystallographic shear compounds, **113**, 529

*n*-Butanal

- on Zn-Cr-O catalysts, alcohol synthesis, temperature-programmed reaction study, **111**, 360

## Butane

- hydrogenolysis on Rh/SiO<sub>2</sub> catalysts, effect of particle microstructure, **111**, 210

- reactions over H-ZSM-5 zeolites, detection of reactive intermediates, **113**, 259

## 1-Butene

- adsorption onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303

- conversion to aromatics over  $\text{AlPO}_4^{11}$ , **110**, 150

- isomerization catalyzed by macroporous ion-exchange resins, effects of local concentration and distribution of sulfonic acid groups, **113**, 434

- oxidation, activity and selectivity of Mo crystallographic shear compounds, **113**, 529

2-Buten-1-ol, *see* Crotyl alcohol

## 3-Buten-2-ol

- liquid-phase hydrogenation and isomerization on Rh/AlPO<sub>4</sub> catalysts, **113**, 172

*tert*-Butyl alcohol

- adsorption onto H-ZSM-5 zeolites, formation of stoichiometric complexes, analysis, **114**, 34

*n*-Butylcyclohexane

- diffusion in ZSM-5 zeolites, measurement of coefficients, **114**, 1

## But-1-yne

- hydrogenation on Pd/Al<sub>2</sub>O<sub>3</sub> catalysts, mechanism, **114**, 411

## C

## Cab-O-Sil

## support of

Cu catalysts, ring opening of cyclopropanes, detection and role of unreduced Cu species, **114**, 478

Cu-*M* (*M* = Al,Cr,Fe) mixed oxide catalysts, selective chemisorption of NH<sub>3</sub> and NO, **109**, 25

## Calcination

Al<sub>2</sub>O<sub>3</sub>-supported Pt-Re and Pt-Rh catalysts, first stages, EXAFS study, **110**, 209

temperature, SrTiO<sub>3</sub> powder, effects on photocatalytic activities, **111**, 296

## Calcium

coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330

effect on Pt particle formation in Y-type zeolites, **113**, 220

promotion of Fe catalysts, high-pressure kinetics of NH<sub>3</sub> synthesis, microscopic model, **110**, 1

## Calcium oxide

Na<sup>+</sup>-promoted catalysts, oxidative dimerization of methane, **111**, 302

promoted Fe<sub>2</sub>O<sub>3</sub> catalysts, synthesis of acetone from ethanol, mechanism, **109**, 298

## Carbenium ions

small aliphatic, stability on zeolite and SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts, NMR spectroscopy, **114**, 167

## Carbon

<sup>13</sup>C, incorporation patterns during methanol and C<sub>2</sub> oxygenate synthesis over Cs-doped Cu/ZnO and Cu/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, **113**, 410

-covered Al<sub>2</sub>O<sub>3</sub>, as support for sulfide catalysts, evaluation, **114**, 291

## deposition

and burnoff in ethylbenzene oxydehydrogenation to styrene over supported metal pyrophosphates, **111**, 14

on Pt during ethylene oxidation, analysis, **113**, 383

## filamentous

growth and gasification on Ni catalysts, reversibility, **110**, 127

growth on Ni, Fe, and Ni-Cu alloy catalysts, model, **109**, 241

gasification by CO<sub>2</sub> over Na<sub>2</sub>O catalysts, mechanism, **109**, 329

graphitic, *see* Graphite

hydrogenation on Co catalysts, Raman-ellipsometry spectroscopy, **110**, 37

methanation and chain growth pathways on Fe/Al<sub>2</sub>O<sub>3</sub> catalysts during Fischer-Tropsch synthesis, **113**, 13

-N bond hydrogenolysis, selectivity dependence on promoter in sulfided Mo*M* and *M* (*M* = Co, Cr, Fe, Ir, Ni, Pd, Pt, Re, Rh, Ru) catalysts, **113**, 206

number distribution in modified Fischer-Tropsch synthesis on reduced promoted fused magnetite catalysts, **111**, 418

reactivity after deposition by CO disproportionation on Rh/TiO<sub>2</sub> or Rh/SiO<sub>2</sub> catalyst surfaces, **111**, 464

## support of

Mo catalysts, sulfidability and hydrodesulfurization, analysis, **112**, 516

MoS<sub>2</sub> hydrodesulfurization catalysts, phosphorus poisoning, **112**, 401

## Pd catalysts

hydrogenation of HCO<sub>3</sub><sup>-</sup> to HCO<sub>2</sub><sup>-</sup> in aqueous solutions, **110**, 184

oxidative carbonylation of aniline, effects of promoters, solvents, and reaction conditions, **114**, 246

## Pt catalysts, deactivation by oxygen

kinetics, **112**, 329

model, **112**, 337

transition metal sulfide catalysts, hydrodenitrogenation activity, periodic trends, **109**, 217

## Carbon dioxide

chemisorption on Mo/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalysts, in catalyst surface structure analysis, **113**, 307

gasification of carbon over Na<sub>2</sub>O catalysts, mechanism, **109**, 329

## Carbonization

polyethylene over acidic zeolites, analysis, **113**, 525

## Carbon monoxide

## adsorption

at activated sites, and CO-H surface complex on Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, detection, **113**, 444

onto Co particles obtained from Co<sub>2</sub>(CO)<sub>8</sub> deposition on MgO and SiO<sub>2</sub>, IR spectroscopy, **113**, 466

onto Cu/ZnO catalysts, temperature-programmed desorption and IR study, **110**, 117

## and desorption

on La<sub>2</sub>O<sub>3</sub>-promoted Rh/SiO<sub>2</sub> catalysts, **109**, 61

over NaX zeolites and supported Ru catalysts, **113**, 398

onto Pd/SiO<sub>2</sub> catalysts

benzene coadsorption and K promotion, **110**, 11

electronic competition effect, **109**, 120

and reaction on slightly hydrated (Fe,Cr)<sub>3</sub>O<sub>4</sub> catalysts, differential pressure and FAB MS studies, **109**, 347

onto Rh/SiO<sub>2</sub> catalysts, benzene coadsorption and K promotion, **110**, 18

chemisorption on Pt/TiO<sub>2</sub> catalysts, effects of dopants, **113**, 106

conversion efficiency over Cr<sub>2</sub>O<sub>3</sub>-promoted  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> catalysts, characterization, **112**, 375

disproportionation, associated carbon deposition on Rh/TiO<sub>2</sub> and Rh/SiO<sub>2</sub> catalyst surfaces, reactivity of carbon, **111**, 464

and H<sub>2</sub>

chemistry at Ru-Ti interface: SMSI model studies, **111**, 383

in ethanol formation over CuO/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, mechanism, **114**, 90

- methanation over Ni/Al<sub>2</sub>O<sub>3</sub> catalysts, transient IR and isotopic study, **112**, 135
- mixtures, iron nitride catalysts in, surface and bulk changes, **113**, 236
- reaction over Ni/Al<sub>2</sub>O<sub>3</sub> catalysts, isotopic study of chain growth, **110**, 354
- temperature-programmed desorption, in analysis of small Pt particles on amorphous Al<sub>2</sub>O<sub>3</sub> and  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>{0001}, **110**, 191
- hydrogenation
- over Al<sub>2</sub>O<sub>3</sub>-, SiO<sub>2</sub>-, and TiO<sub>2</sub>-supported Rh catalysts, kinetic study, **110**, 159
  - catalysts prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
  - over Co/Al<sub>2</sub>O<sub>3</sub> catalysts, independent effects of particle size and reduction extent, **113**, 544
  - by H<sub>2</sub> over Rh/TiO<sub>2</sub> catalysts, IR spectroscopic study, **112**, 176
  - over La<sub>2</sub>O<sub>3</sub>-promoted Rh/SiO<sub>2</sub> catalysts, analysis, **111**, 325
  - over Ni, Pd, and Pt catalysts, analysis by bond-order-conservation method, **113**, 341
  - over Rh/ZrO<sub>2</sub> catalysts, role of experimental parameters in modification of C<sub>2</sub>H<sub>5</sub>OH/CH<sub>4</sub> product ratio, **111**, 345
  - over RuKY catalysts, identification of surface species by *in situ* chemical trapping, **113**, 1
  - on zeolite-supported metal catalysts, effect of Si/Al ratio on secondary reactions, **110**, 47
- induced disruption of Rh/Al<sub>2</sub>O<sub>3</sub> crystallites, effect of NO, **112**, 183
- induced structural changes in supported Rh catalysts, promoter effects, IR analysis, **110**, 413
- isosynthesis with H<sub>2</sub> over ZrO<sub>2</sub> catalysts, **109**, 284
- methanation on Ni(100), effect of sulfur, **110**, 243
- and NO
- interactions over Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 89
  - reaction over SiO<sub>2</sub>-supported Pt and Pt-WO<sub>3</sub> catalysts, kinetics and promotional effects, **109**, 12
- oxidation
- by iron oxides for autoemission control, **110**, 298
  - kinetics, effects of Ce addition to Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, **112**, 543
  - over Mn-Ag composite oxide catalysts, **109**, 198
  - with N<sub>2</sub>O on Mo(CO)<sub>6</sub>-derived supported Mo catalysts, **111**, 50
  - over polycrystalline Pt catalysts, coupled oscillations, **113**, 453
  - on Pt/SiO<sub>2</sub> catalysts, associated spatial propagation of oscillations, catalyst preparation effects, FTIR analysis, **110**, 249
  - on Pt/ZrO<sub>2</sub> polycrystalline catalysts
    - effect of electrochemical oxygen pumping on steady-state and oscillatory behavior, **111**, 170
    - reaction mechanism, solid electrolyte potentiometric study, **111**, 152
    - over Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, autonomous oscillation, **110**, 197
    - on SiO<sub>2</sub>-supported Pt and Pd catalysts, rapid FTIR transient studies, **110**, 319
- PdNa and [PdCONa]<sup>+</sup> complexes as simple models of promoted catalysts, theoretical study, **111**, 409
- reduction of NO<sub>2</sub> on polycrystalline Pt catalysts, steady-state kinetics, **114**, 207
- SiO<sub>2</sub>-Mo catalysts photoreduced in, valence states of Mo ions, **113**, 250
- water-gas shift reaction
- over industrial catalysts, dynamic study, **112**, 345
  - over zeolite-supported Os<sub>3</sub>(CO)<sub>12</sub> catalysts, **112**, 1
- Carbon oxides
- and H<sub>2</sub>, in alcohol synthesis
    - temperature-programmed study of *n*-butanal on Zn-Cr-O catalysts, **111**, 360
    - over Zn-Mn-Cr-K-oxide catalysts, **111**, 120
- Carbon sulfide
- titration, determination of active sites on Pd, letter to editor, **110**, 203; reply, **110**, 206
- Carbonylation
- oxidative, aniline over Pd/C catalysts, effects of promoters, solvents, and reaction conditions, **114**, 246
- Ceria, *see* Ceric oxide
- Ceric oxide
- interaction with Pd/Al<sub>2</sub>O<sub>3</sub> catalysts, characterization, **114**, 23
  - promotion of Rh/SiO<sub>2</sub> catalysts, effect on CO-induced structural changes, IR analysis, **110**, 413
- Cerium
- addition to Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, effects on CO oxidation kinetics, **112**, 543
- Cesium
- addition to heteropolyoxometalate catalysts, effect on methane oxidation, **112**, 54
  - doped Cu/ZnO and Cu/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, methanol and C<sub>2</sub> oxygenate synthesis, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
- Chain growth
- carbon on Fe/Al<sub>2</sub>O<sub>3</sub> catalysts during Fischer-Tropsch synthesis, **113**, 13
  - in modified Fischer-Tropsch synthesis on reduced promoted fused magnetite catalysts, mechanism, **111**, 418
- Charcoal
- deactivation mechanisms, **112**, 267
- Chemical trapping
- in situ*, surface species in CO hydrogenation reactions over RuKY catalysts, **113**, 1
- Chemisorption
- activated hydrogen on supported metal catalysts, comparison, **113**, 317
  - CO on Pt/TiO<sub>2</sub> catalysts, effects of dopants, **113**, 106
  - CO<sub>2</sub> and NO on Mo/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalysts, in catalyst surface structure analysis, **113**, 307

- H<sub>2</sub>**  
 over Nb<sub>2</sub>O<sub>5</sub>-promoted Rh/SiO<sub>2</sub> catalysts, probe for RhNbO<sub>4</sub> formation by strong Rh–Nb<sub>2</sub>O<sub>5</sub> interaction, **112**, 478  
 on Pt catalysts, neutron scattering study, **113**, 509  
**H<sub>2</sub> and O<sub>2</sub>**  
 on Al<sub>2</sub>O<sub>3</sub>- and SiO<sub>2</sub>-supported Rh catalysts, **112**, 201  
 in metal particle size determination in partly reduced Ni/SiO<sub>2</sub> catalysts, **114**, 463  
 on Ni/SiO<sub>2</sub> catalysts, **112**, 107  
 low-temperature oxygen, in characterization of MoO<sub>3</sub>/SiO<sub>2</sub> and WO<sub>3</sub>/SiO<sub>2</sub> catalysts, **113**, 556  
 molecules, effect on mass transfer and location of Brønsted acid sites in H-ZSM-5 zeolites, **114**, 186  
 NO and O<sub>2</sub> on MoO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts reduced in H<sub>2</sub> at elevated temperatures, **113**, 82  
 selective, NH<sub>3</sub> and NO on Cab-O-Sil-supported Cu–*M* (*M* = Al, Cr, Fe) mixed oxide catalysts, **109**, 25
- Chlorine**  
 role in regeneration by hydrogen of coked Pt/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> reforming catalysts, **111**, 235
- Chromia**, *see* Chromic oxide
- Chromic oxide**  
 promotion of  
 $\gamma$ -Fe<sub>2</sub>O<sub>3</sub> catalysts, CO conversion efficiency, characterization, **112**, 375  
 Fe<sub>3</sub>O<sub>4</sub> catalysts, water–gas shift reaction, comparison with supported Cu catalysts, **112**, 325  
 $\alpha$ -Chromic oxide  
 surface adsorption of oxygen, nature and localization, IR spectroscopy, **111**, 421
- Chromium**  
 coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330  
 –Cu mixed oxide catalyst, Cab-O-Sil-supported, selective chemisorption of NH<sub>3</sub> and NO, **109**, 25  
 –Cu polynuclear complex, as model mixed oxide catalyst, isomerization activity, **110**, 364  
 (Fe,Cr)<sub>3</sub>O<sub>4</sub> catalysts, slightly hydrated, adsorption and reaction with CO, differential pressure and FAB MS studies, **109**, 347  
 SiO<sub>2</sub>-supported catalysts, highly dispersed, ethylene polymerization, **111**, 231  
 –Zn–Mn–K-oxide catalysts, preparation, activation, and catalytic behavior: synthesis of alcohols from carbon oxides and H<sub>2</sub>, **111**, 120  
 –Zn–O catalysts, alcohol synthesis from carbon oxides and H<sub>2</sub>: temperature-programmed study of *n*-butanal, **111**, 360
- Claus reaction**  
 modified, on NaX zeolite, UV–visible spectroscopic study, **109**, 252
- Cobalt**  
 Al<sub>2</sub>O<sub>3</sub>-supported catalysts, CO hydrogenation, independent effects of particle size and reduction extent, **113**, 544  
 coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330  
 –Cu catalysts, K-promoted, ZnO–Al<sub>2</sub>O<sub>3</sub>-supported, direct synthesis of alcohols, **114**, 447  
 –K–Mo/Al<sub>2</sub>O<sub>3</sub> water–gas shift catalysts, oxidic precursors, laser Raman and IR studies, **112**, 93  
 –Mo/Al<sub>2</sub>O<sub>3</sub> hydrodesulfurization catalysts, Co–K edge in oxide and sulfided states, structure determination by EXAFS, **113**, 281  
 –Mo bulk sulfides, catalytic properties, effect of preparation method, **113**, 535  
 particle formation from Co<sub>2</sub>(CO)<sub>8</sub> adsorbed onto MgO and SiO<sub>2</sub>, surface properties, analysis by IR spectroscopy of CO adsorption, **113**, 466  
 polycrystalline catalysts, hydrogenation of carbon species, Raman–ellipsometry spectroscopy, **110**, 37  
 promotion of unsupported MoS<sub>2</sub> catalysts, electronic properties, **112**, 313  
 –ZSM-5 zeolite catalysts, secondary reactions in synthesis gas conversion, **113**, 193
- Cobalt sulfide**  
 carbon-covered Al<sub>2</sub>O<sub>3</sub>-supported catalysts, thiophene hydrodesulfurization, effect of support, **114**, 291
- Coke**  
 deposited on  
 bimetallic reforming catalysts, effect on stability, **112**, 357  
 external surfaces of USHY, H-OFF, and H-ZSM-5 zeolites, electron microscopic and EELS studies, **114**, 100  
 Zr(HPO<sub>4</sub>)<sub>2</sub> · *x*H<sub>2</sub>O, catalyst for ethylbenzene oxydehydrogenation, **112**, 221  
 distribution on ZSM-5, XPS study, **109**, 126  
 formation  
 during carbonization of polyethylene formed over H-mordenite, analysis, **113**, 525  
 by reaction of olefins over hydrogen mordenite, EPR measurements  
*in situ* under on-stream conditions, **114**, 144  
 under static conditions, **114**, 136  
 on reforming catalysts, role of chlorine in catalyst regeneration by hydrogen, **111**, 235
- Copper**  
 Cab-O-Sil-supported catalysts, ring opening of cyclopropanes, detection and role of unreduced Cu species, **114**, 478  
 –Co catalysts, K-promoted, ZnO–Al<sub>2</sub>O<sub>3</sub>-supported, direct synthesis of alcohols, **114**, 447  
 coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330  
 Cu<sup>2+</sup>, effect on Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, and SiO<sub>2</sub>–Al<sub>2</sub>O<sub>3</sub> in methylphenothiazine cation formation, **112**, 579  
 mixed oxide catalysts with Al, Cr, and Fe, Cab-O-Sil-supported, selective chemisorption of NH<sub>3</sub> and NO, **109**, 25  
 –Mn alloys, oxidation, in design and preparation of

- planar models of hopcalite oxidation catalysts, **113**, 267
- Ni catalysts, SiO<sub>2</sub>-supported, carbon filament growth, model, **109**, 241
- polynuclear complexes with Al, Cr, and Fe, as model mixed oxide catalysts, isomerization activity, **110**, 364
- Rh catalysts, Aerosil-supported, preparation and activity for alkane reactions, **111**, 374
- TiO<sub>2</sub>-supported catalysts, catalyst-support interactions, effects of consecutive and alternative oxidation and reduction, **113**, 120
- ZnO/Al<sub>2</sub>O<sub>3</sub>-supported catalysts
- Cs-doped, methanol and C<sub>2</sub> oxygenate synthesis, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
- methanol synthesis, mechanism, **109**, 263
- water-gas shift reaction, comparison with Cr<sub>2</sub>O<sub>3</sub>-promoted Fe<sub>3</sub>O<sub>4</sub> catalysts, **112**, 325
- ZnO-supported catalysts
- CO and H<sub>2</sub> adsorption, temperature-programmed desorption and IR study, **110**, 117
- methanol and C<sub>2</sub> oxygenate synthesis, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
- methanol synthesis, **114**, 440
- Cracking
- branched paraffins on HY zeolites, analysis, **113**, 353
- catalytic, in characterization of steamed Y and LZ-210 zeolites, **114**, 71
- cumene
- over AlPO<sub>4</sub><sup>-5</sup> catalysts, effects of thermal, hydrothermal, and acid-base treatments, **111**, 254
- on H-ZSM-5 zeolites, kinetics, **109**, 180
- n*-decane on zeolite catalysts, enhancement of light hydrocarbon formation by zeolite field gradient, **114**, 121
- isobutane over amorphous and crystalline aluminosilicates, mechanism, **112**, 565
- neopentane over solid acids, mechanism, **110**, 171
- Cracking catalysts
- distribution of Ni and V, imaging secondary ion mass spectrometry, **109**, 387
- Crotyl alcohol
- liquid-phase hydrogenation and isomerization on Rh/AlPO<sub>4</sub> catalysts, **113**, 172
- Crystallites
- migration as sintering mechanism in Pt/Al<sub>2</sub>O<sub>3</sub> catalysts, **109**, 433
- Crystallographic shear compounds
- Mo, role in selective oxidation of C<sub>4</sub> hydrocarbons, **113**, 529
- Cumene
- cracking
- over AlPO<sub>4</sub><sup>-5</sup> catalysts, effects of thermal, hydrothermal, and acid-base treatments, **111**, 254
- on H-ZSM-5 zeolites, kinetics, **109**, 180
- synthesis by alkylation of benzene with propylene over H-ZSM-5 zeolites, **109**, 212
- Cupric oxide
- ZnO-Al<sub>2</sub>O<sub>3</sub>-supported catalysts, ethanol formation from synthesis gas, mechanism, **114**, 90
- ZnO-supported catalysts
- malachite-like precursors, structural characterization, **109**, 367
- methanol and higher alcohol syntheses, relationship, **111**, 445
- Cuprous chloride
- catalysts, in direct process for production of methylchlorosilanes, characterization of reactive areas, **114**, 259
- Cyclodextrins
- α-, β-, and γ-, inclusion complexes with diisopropylfluorophosphate, characterization, **112**, 464
- Cyclohexane
- in AlPO<sub>4</sub><sup>-5</sup>, sorption capacity, isotherms, and thermodynamics, **111**, 23
- diffusion in ZSM-5 zeolites, measurement of coefficients, **114**, 1
- Cyclohexene
- disproportionation over Pt/Al<sub>2</sub>O<sub>3</sub>, Pd/Al<sub>2</sub>O<sub>3</sub>, and Ni/kieselguhr catalysts, kinetic and mechanistic study, **111**, 397
- Cyclopentylamine
- hydrogenolysis on Pt film catalysts, **110**, 407
- Cyclopropane
- isomerization, in characterization of polynuclear metal complexes, **110**, 364
- ring opening on Cu/Cab-O-Sil catalysts, detection and role of unreduced Cu species, **114**, 478
- D
- Deactivation
- ASC whetlerite charcoal, mechanisms, **112**, 267
- ferric molybdate catalysts, kinetics, **109**, 132
- Pt/C catalysts by oxygen
- kinetics, **112**, 329
- model, **112**, 337
- n*-Decane
- cracking on zeolite catalysts, enhancement of light hydrocarbon formation by zeolite field gradient, **114**, 121
- Decomposition
- impregnated thiosalt, in preparation of Co-Mo and Ni-Mo bulk sulfides, effect on catalytic properties, **113**, 535
- methanol on Fe(110), Auger electron spectroscopic study, **109**, 314
- methylamine on polycrystalline Pt catalysts, steady-state kinetics and oscillations, **114**, 230
- NH<sub>3</sub> over 430-SS etched metal catalysts, **112**, 590
- photocatalytic, water over NiO-K<sub>4</sub>Nb<sub>6</sub>O<sub>17</sub> catalysts, **111**, 67
- thermal, heteropoly metal complexes immobilized on SiO<sub>2</sub>, in preparation of supported mixed metal oxides, **112**, 157

- Dehydration  
secondary alcohols, impact of inductive effect, **110**, 416
- Dehydrocyclization  
activity of bifunctional catalysts, analysis with 1-methyl-2-ethylbenzene, **110**, 348
- Dehydrogenation  
oxidative  
methane over pure and Li-doped MgO catalysts, blank reactor corrections, **111**, 317  
methanol over Ag catalysts, effect of N<sub>2</sub>O, **114**, 303  
propane over V-Mg-O catalysts, **109**, 463
- Deposition  
carbon on Pt during ethylene oxidation, analysis, **113**, 383  
coke on external surfaces of USHY, H-OFF, and H-ZSM-5 zeolites, electron microscopic and EELS studies, **114**, 100  
photocatalytic, Ag on powder TiO<sub>2</sub>, impact on selective Ag recovery from aqueous solution, **113**, 72  
steam, in preparation of MoO<sub>3</sub>/SiO<sub>2</sub> catalysts, evaluation, **114**, 460
- Desorption  
-adsorption processes, CO over NaX zeolite and supported Ru catalysts, **113**, 398  
CO and H<sub>2</sub> on La<sub>2</sub>O<sub>3</sub>-promoted Rh/SiO<sub>2</sub> catalysts, **109**, 61  
-diffusion  
NH<sub>3</sub> in molecular sieves, temperature-programmed desorption study: application to partially decationated Y-zeolites, **112**, 444  
NH<sub>3</sub>-zeolite systems in molecular sieves, temperature-programmed desorption study: theory, **112**, 437  
temperature-programmed, *see* Temperature-programmed desorption
- Deuterium exchange  
benzo[*b*]thiophene over hydrodesulfurization catalysts, model complex and heterogeneous reactor studies, **113**, 36
- Dicobalt octacarbonyl  
adsorbed onto MgO and SiO<sub>2</sub>, Co particle formation from, surface properties, analysis by IR spectroscopy of CO adsorption, **113**, 466
- Differential pressure method  
in study of CO adsorption and reaction on slightly hydrated (Fe,Cr)<sub>3</sub>O<sub>4</sub> catalysts, **109**, 347
- Differential scanning calorimetry  
acid site strength distribution in mordenites, **113**, 490
- Diffuse reflectance spectroscopy  
TiO<sub>2</sub>/SiO<sub>2</sub> catalysts, **112**, 489
- Diffusion  
cyclohexanes in ZSM-5 zeolites, measurement of coefficients, **114**, 1  
-desorption  
NH<sub>3</sub> in molecular sieves, temperature-programmed desorption study: application to partially decationated Y-zeolites, **112**, 444  
NH<sub>3</sub>-zeolite systems in molecular sieves, temperature-programmed desorption study: theory, **112**, 437  
intraparticle, analysis during temperature-programmed desorption from porous catalysts, experimental procedures, **109**, 396  
surface, in porous catalysts, theoretical and experimental aspects, letter to editor, **109**, 468; reply, **113**, 572
- Diffusivity  
catalyst particles, determination, **111**, 460
- Diisopropylfluorophosphate, *see* Isofluorophate
- Dimerization  
oxidative, methane over  
Li-promoted ZnO catalysts, **112**, 366  
Na<sup>+</sup>-promoted CaO catalysts, **111**, 302
- Dimethylamine  
selective synthesis over small-pore H-RHO zeolites analysis, **113**, 367  
effects of impurities, **114**, 8
- 2,2-Dimethylbutane  
reactions on Ir/SiO<sub>2</sub> catalysts, role of surface carbonaceous layers and metal particle size, **111**, 77
- cis*-1,2-Dimethylcyclopropane  
ring opening on Cu/Cab-O-Sil catalysts, detection and role of unreduced Cu species, **114**, 478
- Dinitriles  
hydrogenation to aminonitriles over Rh/MgO catalysts, catalyst preparation and characterization, **112**, 145
- Dinitrogen  
isotopic equilibration over Raney Ru catalysts, importance of structural factor, **112**, 469
- Diols  
in preparation of V/Ti binary phosphate catalysts, effects on physical and chemical properties and performance in aldol condensation, **113**, 562
- Dispersion  
Mo, effect on methanol oxidation over Mo/SiO<sub>2</sub> catalysts, **109**, 354
- Disproportionation  
CO, associated carbon deposition on Rh/SiO<sub>2</sub> and Rh/TiO<sub>2</sub> catalyst surfaces, reactivity of carbon, **111**, 464  
cyclohexene over Pd/Al<sub>2</sub>O<sub>3</sub>, Pt/Al<sub>2</sub>O<sub>3</sub>, and Ni/kieselguhr catalysts, kinetic and mechanistic study, **111**, 397
- Dissociation constants  
charged surface groups of SiO<sub>2</sub>, regulation by variation of solution temperature or modification with Na<sup>+</sup>, **109**, 41

## E

EELS, *see* Electron energy loss spectroscopy

Electrical conductivity

doped TiO<sub>2</sub> catalyst supports, **113**, 106

unsupported Co-promoted MoS<sub>2</sub> catalysts, **112**, 313

- Electrocatalysis  
hydrogen evolution and molecular oxygen reduction in acid medium, effect of *d*-state density and chemistry of transition metal cluster selenides, **112**, 384
- Electron bombardment  
in solid state reduction of Na ions in NaY zeolites, **111**, 433
- Electron energy loss spectroscopy  
external coke deposits on USHY, H-OFF, and H-ZSM-5 zeolites, **114**, 100
- Electronic competition effect  
CO adsorption onto Pd/SiO<sub>2</sub> catalysts, **109**, 120
- Electronic interactions  
Rh/TiO<sub>2</sub> system, charge transfer analysis, **109**, 1
- Electronic response  
surface, effect of poisoning in catalytic reactions, **110**, 243
- Electron microscopy  
controlled atmosphere, gasification of graphite by H<sub>2</sub>O, H<sub>2</sub>, and O<sub>2</sub> catalyzed by Ni-K mixture, **110**, 74
- Electron paramagnetic resonance  
coke formation by reaction of olefins over hydrogen mordenite  
measurements under on-stream conditions, **114**, 144  
measurements under static conditions, **114**, 136  
Ti<sup>3+</sup> ions at metal-support interface of Pt/TiO<sub>2</sub> catalysts, **113**, 96
- Electron spectroscopy for chemical analysis  
oxidative and reductive properties of Pt/TiO<sub>2</sub> catalysts, **109**, 226  
P-modified ZSM-5 zeolites, **112**, 453
- Electron spin resonance  
thiophene hydrodesulfurization on ZrO<sub>2</sub>-supported sulfided molybdenum oxide catalysts, **111**, 88
- Ellipsometry  
with Raman spectroscopy, hydrogenation of carbon species on Co catalysts, **110**, 37
- Epoxidation  
olefins over Ag catalysts, surface atomic oxyradical mechanism, **112**, 80
- ESCA, *see* Electron spectroscopy for chemical analysis
- Etching  
Pt alloy gauzes, surface area measurement, **113**, 475
- Ethane  
homologation over supported reduced MoO<sub>3</sub> catalysts, **109**, 221  
hydrogenolysis  
over Nb<sub>2</sub>O<sub>5</sub>-promoted Rh/SiO<sub>2</sub> catalysts: probe for RhNbO<sub>4</sub> formation by strong Rh-Nb<sub>2</sub>O<sub>5</sub> interaction, **112**, 478  
on Rh/SiO<sub>2</sub> catalysts, effect of particle microstructure, **111**, 210  
reactions over H-ZSM-5 zeolites, detection of reactive intermediates, **113**, 259
- Ethanol, *see* Ethyl alcohol
- Ethene, *see* Ethylene
- Ethyl alcohol  
conversion to acetone over MO (*M* = Ca, Mn, Zn) promoted Fe<sub>2</sub>O<sub>3</sub> catalysts, mechanism, **109**, 298  
formation from synthesis gas over CuO/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, mechanism, **114**, 90  
-methane product ratio from CO hydrogenation over Rh/ZrO<sub>2</sub> catalysts, modification, role of experimental parameters, **111**, 345  
synthesis over Cs-doped Cu/ZnO and Cu/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
- Ethylation  
benzene with methanol over H-ZSM-5 zeolites, analysis, **114**, 271
- Ethylbenzene  
oxydehydrogenation to styrene  
on coke/Zr(HPO<sub>4</sub>)<sub>2</sub> · xH<sub>2</sub>O catalysts, kinetics, **112**, 221  
over supported metal pyrophosphate catalysts  
catalyst composition and reaction variables, **111**, 1  
microbalance studies of carbon deposition and burnoff, **111**, 14  
synthesis from 1-butene over AlPO<sub>4</sub><sup>11</sup>, **110**, 150
- Ethylcyclohexane  
diffusion in ZSM-5 zeolites, measurement of coefficients, **114**, 1
- Ethylene  
carbonization over hydrogen mordenite, EPR measurements  
under on-stream conditions, **114**, 144  
under static conditions, **114**, 136  
catalytic oxidation mechanism, kinetics, **109**, 236; reply, **109**, 238  
conversion over AlPO<sub>4</sub><sup>11</sup>, **113**, 263  
oxidation  
to acetaldehyde over SiO<sub>2</sub>-supported molten-salt Wacker catalysts, analysis, **114**, 377  
over Ag-Zn/αAl<sub>2</sub>O<sub>3</sub> catalysts, **109**, 143  
carbon deposition during, analysis, **113**, 383  
over Pt/SiO<sub>2</sub> catalysts, associated sintering, **113**, 129  
polymerization over highly dispersed Cr(III)/SiO<sub>2</sub> catalysts, **111**, 231
- Europium  
cations in X zeolites, hydrolysis, FTIR spectroscopy, **114**, 53  
coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330  
-exchanged synthetic faujasite zeolites, luminescence spectroscopy, **114**, 58
- EXAFS, *see* Extended X-ray absorption fine structure
- Exfoliation  
restacked MoS<sub>2</sub> catalysts, Al inclusions and precipitates, properties, **112**, 418
- Extended X-ray absorption fine structure  
bimetallic Al<sub>2</sub>O<sub>3</sub>-supported Pt-Re and Pt-Rh catalysts in first stages of preparation, drying, and calcination, **110**, 209

- Co–Mo/Al<sub>2</sub>O<sub>3</sub> hydrodesulfurization catalysts: Co–K edge in oxide and sulfided states, **113**, 281
- Fe–Ni/SiO<sub>2</sub> catalysts, **112**, 282
- Ir/Al<sub>2</sub>O<sub>3</sub> and Ir–Co/Al<sub>2</sub>O<sub>3</sub> catalysts in isomerization of labeled hexanes, **114**, 153
- metal particle size determination in partly reduced Ni/SiO<sub>2</sub> catalysts, **114**, 463
- F
- FAB MS, *see* Mass spectrometry, fast atom bombardment
- Faujasite  
ultrastable catalysts, acidity comparison with WO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, **111**, 286
- Ferric antimonate  
unsupported catalysts, CO and propene oxidation for autoemission control, **110**, 298
- Ferric molybdate  
catalysts  
deactivation kinetics, **109**, 132  
unsupported, CO and propene oxidation for autoemission control, **110**, 298
- Ferric oxide  
MO promoted (*M* = Ca, Mn, Zn) catalysts, synthesis of acetone from ethanol, mechanism, **109**, 298  
SiO<sub>2</sub>-supported catalysts, methane oxidation, effect of Ce addition to catalyst, **112**, 54  
surface basicity, characterization by microcalorimetry and FTIR spectroscopy of adsorbed hexafluoroisopropanol, **109**, 378  
unsupported and Al<sub>2</sub>O<sub>3</sub>- and TiO<sub>2</sub>-supported catalysts, CO and propene oxidation for autoemission control, **110**, 298
- γ-Ferric oxide  
Cr<sub>2</sub>O<sub>3</sub>-promoted catalysts, CO conversion efficiency, characterization, **112**, 375
- Ferric phosphate  
unsupported catalysts, CO and propene oxidation for autoemission control, **110**, 298
- Ferrochrome  
industrial catalysts, water–gas shift reaction, dynamic study, **112**, 345
- Ferrosulfuric oxide  
Cr<sub>2</sub>O<sub>3</sub>-promoted catalysts, water–gas shift reaction, comparison with supported Cu catalysts, **112**, 325  
reduced promoted fused catalysts, modified Fischer–Tropsch synthesis, carbon number distribution and chain-growth mechanism, **111**, 418
- Films  
thin, TiO<sub>2</sub>–SiO<sub>2</sub>, support of Ni particles, sintering and pit formation, **111**, 440
- Fischer–Tropsch synthesis  
on Fe/Al<sub>2</sub>O<sub>3</sub> catalysts, carbon methanation and chain growth pathways, **113**, 13  
modified, on reduced promoted fused magnetite catalysts, carbon number distribution and chain-growth mechanism, **111**, 418
- Formaldehyde  
synthesis from methane and O<sub>2</sub> over MoO<sub>3</sub>/SiO<sub>2</sub> and related catalysts, **109**, 187
- Formate  
in aqueous solution, formation by heterogeneous catalytic hydrogenation of HCO<sub>3</sub><sup>–</sup>, **110**, 184
- Formyl complexes  
Pd and Rh, relative stabilities, theoretical study, **112**, 34
- Fourier transform–infrared spectroscopy  
catalyst preparation effects on spatial propagation of oscillations during CO oxidation on Pt/SiO<sub>2</sub>, **110**, 249
- CO and H<sub>2</sub>  
adsorption onto Cu/ZnO catalysts, **110**, 117  
reaction over Rh/TiO<sub>2</sub> catalysts, **112**, 176  
in determination of surface basicity of various oxides, **109**, 378  
hydrolysis of Eu cations in X zeolites, **114**, 53  
NO–CO reaction over SiO<sub>2</sub>-supported Pt and Pt–WO<sub>3</sub> catalysts, **109**, 12  
rapid transient, CO oxidation on Pt/SiO<sub>2</sub> and Pd/SiO<sub>2</sub> catalysts, **110**, 319
- FTIR, *see* Fourier transform–infrared spectroscopy
- Furan  
adsorption onto V<sub>2</sub>O<sub>5</sub>–P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303
- 2,5*H*-Furanone  
adsorption onto V<sub>2</sub>O<sub>5</sub>–P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303
- G
- Gas  
–water shift reaction  
on Cr<sub>2</sub>O<sub>3</sub>-promoted Fe<sub>3</sub>O<sub>4</sub> and supported Cu catalysts, comparison, **112**, 325  
over industrial catalysts, dynamic study, **112**, 345  
K–Co–Mo/Al<sub>2</sub>O<sub>3</sub> catalysts for, laser Raman and IR studies of oxidic precursors, **112**, 93  
over zeolite-supported Os<sub>3</sub>(CO)<sub>12</sub> catalysts, analysis, **112**, 1
- Gasification  
carbon by CO<sub>2</sub> over Na<sub>2</sub>O catalysts, mechanism, **109**, 329  
carbon filaments on Ni catalysts, reversibility, **110**, 127  
graphite by H<sub>2</sub>O, H<sub>2</sub>, and O<sub>2</sub> catalyzed by Ni–K mixture, controlled atmosphere electron microscopy, **110**, 74
- Gasoline  
formation from methanol over H-ZSM-5 zeolites, benzene sequestration test for reaction intermediates, **110**, 310  
–methanol reactions, in characterization of P-modified ZSM-5 zeolites, **112**, 453
- Gauzes  
Pt alloy, etching of, surface area measurement, **113**, 475

- Germanium**  
 doping of Pt/TiO<sub>2</sub> catalysts, effect on performance, **113**, 106  
 GeMo<sub>12</sub>O<sub>40</sub> heteropolyanions, electronic structure and reduction behavior, **111**, 336
- Gold**  
 -Rh catalysts, support effects on metal-metal interaction, **111**, 41  
 support of Pt catalysts, acetone hydrogenation, metal-support effects, **113**, 52
- Graphite**  
 gasification by H<sub>2</sub>O, H<sub>2</sub>, and O<sub>2</sub> catalyzed by Ni-K mixture, controlled atmosphere electron microscopy, **110**, 74  
 hydrogenation, catalyzed  
   associated tunneling action of group VIII metal particles, **114**, 46  
   by Ru particles, mechanism, **111**, 220  
 support of Ru catalysts, role in benzene hydrogenation, **111**, 429
- H**
- Helium**  
 adsorption over NaA zeolites, analysis, **113**, 540
- n*-Heptane**  
 reactions over H-ZSM-5 zeolites, detection of reactive intermediates, **113**, 259
- Heteropolyanions**  
 XMo<sub>12</sub>O<sub>40</sub> (X = As, Ge, P, Si), electronic structure and reduction behavior, **111**, 336
- Heteropoly compounds**  
 metal complexes immobilized on SiO<sub>2</sub>, in preparation of supported mixed metal oxides by thermal decomposition, **112**, 157  
 NH<sub>3</sub> adsorption onto, IR spectroscopy, **114**, 469  
 SiO<sub>2</sub>-supported catalysts, nature and stability during oxidation of methane, **109**, 206
- Hexacarbonylmolybdenum**  
 catalysts, supported, surface properties, **114**, 347
- n*-Hexadecane**  
 reactions on H-Y zeolites, product distribution and kinetics, temperature effects, **109**, 274
- Hexafluoroisopropanol**  
 adsorbed, in characterization of oxide surface basicity by microcalorimetry and FTIR spectroscopy, **109**, 378
- n*-Hexane**  
 in AlPO<sub>4</sub><sup>-5</sup>, sorption capacity, isotherms, and thermodynamics, **111**, 23  
 aromatization over ZnO-H-ZSM-5 catalysts, mechanism, **114**, 284  
 conversion to methylcyclopentane over Pt/SiO<sub>2</sub> catalysts, effects of partial pressure and temperature, **112**, 303  
 hydroisomerization over Pt/mordenite catalysts, effects of aromatic cofeeds, **111**, 425  
 and methylcyclopentane, conversion over Pt/SiO<sub>2</sub> catalysts, isomerization kinetics and hydrogenolysis selectivities, **112**, 290  
 reactions over H-ZSM-5 zeolites, detection of reactive intermediates, **113**, 259  
 reforming over bimetallic catalysts, effect of coke deposition on stability, **112**, 357  
 transformations over Pt-containing pentasil catalysts, H<sub>2</sub> effects, **109**, 156
- Hexanes**  
<sup>13</sup>C-labeled, isomerization on Al<sub>2</sub>O<sub>3</sub>-supported Ir and Ir-Co catalysts, correlations between product distributions and catalyst structure, EXAFS study, **114**, 153
- 1-Hexene**  
 hydrogenation over Ru/Al<sub>2</sub>O<sub>3</sub> catalysts containing partial monolayers of adsorbed sulfur, **112**, 229
- Homologation**  
 ethane over supported reduced MoO<sub>3</sub> catalysts, **109**, 221
- Hopcalite**  
 oxidation catalysts, planar models, design and preparation, **113**, 267
- Hydridocarbonyl complexes**  
 Pd and Rh, relative stabilities, theoretical study, **112**, 34
- Hydrocarbons**  
 chain growth during CO/H<sub>2</sub> reaction over Ni/Al<sub>2</sub>O<sub>3</sub> catalysts, isotopic study, **110**, 354  
 isomerization on Mo and Mo/Al<sub>2</sub>O<sub>3</sub> catalysts, active sites, characterization, **113**, 569  
 light, formation by *n*-decane cracking on zeolites, enhancement by zeolite field gradient, **114**, 121  
 sorption on zeolite omega, **111**, 94
- Hydrodenitrogenation**  
 activity of carbon-supported transition metal sulfide catalysts, periodic trends, **109**, 217  
 benzo(*f*)quinoline and benzo(*h*)quinoline over sulfided NiO-MoO<sub>3</sub>/γ-Al<sub>2</sub>O<sub>3</sub> catalysts, **112**, 411
- Hydrodeoxygenation**  
 vapor-phase catalytic, benzofuran over NiMo/γ-Al<sub>2</sub>O<sub>3</sub> presulfided catalysts, **111**, 243
- Hydrodesulfurization**  
 carbon-, and Al<sub>2</sub>O<sub>3</sub>-supported MoS<sub>2</sub> catalysts, phosphorus poisoning, **112**, 401  
 catalysts, deuterium exchange of benzo[*b*]thiophene, model complex and heterogeneous reactor studies, **113**, 36
- Mo catalysts supported on Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, and carbon, analysis, **112**, 516**
- thiophene**  
 on carbon-covered Al<sub>2</sub>O<sub>3</sub>-supported catalysts, enhancement by support, **114**, 291  
 on NiMo/Al<sub>2</sub>O<sub>3</sub> catalysts, poisoning by nitrogen compounds, **110**, 375  
 over Ru/Al<sub>2</sub>O<sub>3</sub> catalysts containing partial monolayers of adsorbed sulfur, **112**, 229  
 over sulfided Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, effect of surface phase behavior on catalyst activity and selectivity, **112**, 250  
 over transition metal surfaces, structure insensitivity over Mo and structure sensitivity over Rh, **110**, 423

on ZrO<sub>2</sub>-supported sulfided molybdenum oxide catalysts, ESR study, **111**, 88

### Hydrogen

activated, chemisorption on various supported metal catalysts, comparison, **113**, 317

#### adsorption

onto Cu/ZnO catalysts, temperature-programmed desorption and IR study, **110**, 117

and desorption on La<sub>2</sub>O<sub>3</sub>-promoted Rh/SiO<sub>2</sub> catalysts, **109**, 61

onto Pt catalysts, neutron scattering study, **113**, 509

and carbon oxides, in alcohol synthesis

temperature-programmed study of *n*-butanal on Zn–Cr–O catalysts, **111**, 360

over Zn–Mn–Cr–K-oxide catalysts, **111**, 120

#### chemisorption

over Nb<sub>2</sub>O<sub>5</sub>-promoted Rh/SiO<sub>2</sub> catalysts: probe for RhNbO<sub>4</sub> formation by strong Rh–Nb<sub>2</sub>O<sub>5</sub> interaction, **112**, 478

on Ni/SiO<sub>2</sub> catalysts, interaction with oxygen, **112**, 107

#### and CO

chemistry at Ru–Ti interface, SMSI model studies, **111**, 383

in ethanol formation over CuO/ZnO–Al<sub>2</sub>O<sub>3</sub> catalysts, mechanism, **114**, 90

methanation over Ni/Al<sub>2</sub>O<sub>3</sub> catalysts, transient IR and isotopic study, **112**, 135

mixtures, iron nitride catalysts in, surface and bulk changes, **113**, 236

#### reaction over

Al<sub>2</sub>O<sub>3</sub>-, SiO<sub>2</sub>-, and TiO<sub>2</sub>-supported Rh catalysts, kinetic study, **110**, 159

Ni/Al<sub>2</sub>O<sub>3</sub> catalysts, isotopic study of chain growth, **110**, 354

temperature-programmed desorption, in analysis of small Pt particles on amorphous Al<sub>2</sub>O<sub>3</sub> and  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>{0001}, **110**, 191

effect on selectivity of Pt-containing pentasil catalysts in *n*-hexane transformations, **109**, 156

evolution in acid medium, effect of *d*-state density and chemistry of transition metal cluster selenides, **112**, 384

interaction with Al<sub>2</sub>O<sub>3</sub>- and SiO<sub>2</sub>-supported Rh catalysts, **112**, 201

isosynthesis with CO over ZrO<sub>2</sub> catalysts, **109**, 284

oxidation on polycrystalline Ag catalysts, solid electrolyte potentiometric study, **113**, 295

–oxygen chemisorption, in metal particle size determination in partly reduced Ni/SiO<sub>2</sub> catalysts, **114**, 463

#### in reduction of

MoO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts at elevated temperatures, associated surface chemistry, **113**, 82

Pt(NH<sub>3</sub>)<sub>4</sub><sup>2+</sup>/montmorillonite catalysts, **112**, 126

regeneration of coked Pt/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> reforming catalysts, role of chlorine, **111**, 235

spillover on SiO<sub>2</sub>, induction of catalytic activity, kinetics and mechanism, **112**, 116

transfer from C-14 ring labeled methylcyclohexane during methanol conversion to gasoline over H-ZSM-5 zeolites, **111**, 436

### Hydrogenation

acetone over Pt catalysts, metal–support effects, **113**, 52

#### benzene

over H-Y zeolites loaded with nickel and molybdenum sulfides, analysis, **114**, 388

over MgO-, SiO<sub>2</sub>–Al<sub>2</sub>O<sub>3</sub>-, and graphite-supported Ru catalysts, role of support, **111**, 429

on MoO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts reduced in H<sub>2</sub> at elevated temperatures, **113**, 82

1,3-butadiene on Pt single crystals, effects of surface structure and K and Na addition, **112**, 21

but-1-yne on Pd/Al<sub>2</sub>O<sub>3</sub> catalysts, mechanism, **114**, 411

carbon species on Co catalysts, Raman–ellipsometry spectroscopy, **110**, 37

### CO

catalysts prepared from molecular Ru carbonyl clusters: support effects on catalyst structure and stability, **110**, 388

over Co/Al<sub>2</sub>O<sub>3</sub> catalysts, independent effects of particle size and reduction extent, **113**, 544

over La<sub>2</sub>O<sub>3</sub>-promoted Rh/SiO<sub>2</sub> catalysts, analysis, **111**, 325

over Ni, Pd, and Pt catalysts, analysis by bond-order-conservation method, **113**, 341

over Rh/TiO<sub>2</sub> catalysts, IR spectroscopic study, **112**, 176

over Rh/ZrO<sub>2</sub> catalysts: role of experimental parameters in modification of C<sub>2</sub>H<sub>5</sub>OH/CH<sub>4</sub> product ratio, **111**, 345

on Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, activated adsorption sites and CO–H surface complex, detection, **113**, 444

over RuKY catalysts, identification of surface species by *in situ* chemical trapping, **113**, 1

on zeolite-supported metal catalysts, effect of Si/Al ratio on secondary reactions, **110**, 47

–dehydrogenation catalysts, analysis with 1-methyl-2-ethylbenzene, **110**, 348

dinitriles to aminonitriles over Rh/MgO catalysts, catalyst preparation and characterization, **112**, 145

#### graphite, catalyzed

associated tunneling action of group VIII metal particles, **114**, 46

by Ru particles, mechanism, **111**, 220

heterogeneous catalytic, HCO<sub>3</sub><sup>-</sup> to HCO<sub>2</sub><sup>-</sup> in aqueous solutions, **110**, 184

1-hexene over Ru/Al<sub>2</sub>O<sub>3</sub> catalysts containing partial monolayers of adsorbed sulfur, **112**, 229

isoprene on MoS<sub>2</sub>/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalysts, active site identification, **109**, 320

liquid-phase,  $\alpha$ , $\beta$ -unsaturated alcohols on Rh/AlPO<sub>4</sub> catalysts, **113**, 172

- substituted benzenes and phenols over sulfided NiO–MoO<sub>3</sub>/γ-Al<sub>2</sub>O<sub>3</sub> catalysts, role of electronic and steric factors, **112**, 12
- Hydrogenolysis
- alkanes on metallic Mo/Al<sub>2</sub>O<sub>3</sub> catalysts, **113**, 567
  - C–N bond, selectivity dependence on promoter in sulfided MoM and M (M = Co, Cr, Fe, Ir, Ni, Pd, Pt, Re, Rh, Ru) catalysts, **113**, 206
  - cyclopentylamine on Pt film catalysts, **110**, 407
  - 2,2-dimethylbutane on Ir/SiO<sub>2</sub> catalysts, role of surface carbonaceous layers and metal particle size, **111**, 77
  - ethane over Nb<sub>2</sub>O<sub>5</sub>-promoted Rh/SiO<sub>2</sub> catalysts: probe for RhNbO<sub>4</sub> formation by strong Rh–Nb<sub>2</sub>O<sub>5</sub> interaction, **112**, 478
  - methylcyclopentane and acyclic hexanes over Pt/SiO<sub>2</sub> catalysts, selectivities, **112**, 290
  - pentane and neohexane over Aerosil-supported Rh–Cu catalysts, **111**, 374
- Hydrogen sulfide
- modified Claus reaction with SO<sub>2</sub> on NaX zeolites, UV–visible spectroscopic study, **109**, 252
- Hydroisomerization
- n-hexane over Pt/mordenite catalysts, effects of aromatic cofeeds, **111**, 425
- Hydrolysis
- Eu cations in X zeolites, FTIR spectroscopy, **114**, 53
- Hydroxide groups
- heterogeneity in NaH-ZSM-5 zeolites, IR spectroscopy, **114**, 368
- Hydroxycarbonates
- Cu and Zn, precursors of CuO–ZnO catalysts, structural characterization, **109**, 367
- Hydroxy carboxylic acids
- in preparation of V/Ti binary phosphate catalysts, effects on physical and chemical properties and performance in aldol condensation, **113**, 562
- I
- Image processing
- and TEM, in characterization of Rh/TiO<sub>2</sub> catalysts, **111**, 353
- Inductive effect
- for secondary alcohol dehydration, impact, **110**, 416
- Infrared spectroscopy
- adsorption states of 1,3-butadiene, 1-butene, furan, 2,5H-furanone, and maleic anhydride on V<sub>2</sub>O<sub>5</sub>–P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, **109**, 303
  - CO adsorbed onto Co particles obtained from Co<sub>2</sub>(CO)<sub>8</sub> deposition on MgO and SiO<sub>2</sub>, **113**, 466
  - CO, NO, and CO + NO behavior over Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, **109**, 89
  - heterogeneity of hydroxide groups in NaH-ZSM-5 zeolites, **114**, 368
  - ion-exchanged mordenite, in acidity characterization, **112**, 505
  - low-temperature, TiO<sub>2</sub>/SiO<sub>2</sub> catalysts, **112**, 489
  - NH<sub>3</sub> adsorbed onto heteropoly compounds, **114**, 469
  - oxidic precursors of K–Co–Mo/Al<sub>2</sub>O<sub>3</sub> water gas shift catalysts, **112**, 93
  - oxygen adsorption onto α-Cr<sub>2</sub>O<sub>3</sub> surface, **111**, 421
  - P-modified ZSM-5 zeolites, **112**, 453
  - promoter effects on CO-induced structural changes in supported Rh catalysts, **110**, 413
  - simultaneous measurement *in situ* of support, metal, and gas phase temperatures, **110**, 103
  - transient, methanation of CO–H<sub>2</sub> mixtures over Ni/Al<sub>2</sub>O<sub>3</sub> catalysts, **112**, 135
  - ZSM-5 zeolite acid sites modified by steaming, **110**, 404
- Infusorial earth
- support of Ni catalysts, irreversible hydrogen transfer in cyclohexene disproportionation, kinetic and mechanistic study, **111**, 397
- Iodides
- as promoters of oxidative carbonylation of aniline over Pd/C catalysts, evaluation, **114**, 246
- Ion-exchange resins
- macroporous catalysts, 1-butene isomerization, effects of local concentration and distribution of sulfonic acid groups, **113**, 434
- Ion scattering spectroscopy
- oxidative and reductive properties of Pt/TiO<sub>2</sub> catalysts, **109**, 226
  - tungsten oxides and WO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, **110**, 139
- Iridium
- Al<sub>2</sub>O<sub>3</sub>-supported catalysts
    - isomerization of labeled hexanes, correlations between product distributions and catalyst structure, EXAFS study, **114**, 153
    - surface chemistry during preparation, laser Raman spectroscopy, **113**, 164
    - temperature-programmed reduction profiles, analysis, **111**, 59  - Co/Al<sub>2</sub>O<sub>3</sub> catalysts, isomerization of labeled hexanes, correlations between product distributions and catalyst structure, EXAFS study, **114**, 153
  - Pt/Al<sub>2</sub>O<sub>3</sub> catalysts
    - surface chemistry during preparation, laser Raman spectroscopy, **113**, 164
    - temperature-programmed reduction profiles, analysis, **111**, 59  - SiO<sub>2</sub>-supported catalysts, 2,2-dimethylbutane reactions: role of surface carbonaceous layers and metal particle size, **111**, 77
- Iron
- Al-, Ca-, and K-promoted catalysts, high-pressure kinetics of NH<sub>3</sub> synthesis, microscopic model, **110**, 1
  - Al<sub>2</sub>O<sub>3</sub>-supported catalysts
    - carbon methanation and chain growth pathways during Fischer–Tropsch synthesis, **113**, 13
    - hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317

- coexchanged with Y-zeolites and second polyvalent cation, characterization and catalytic studies, **110**, 330
- Cu  
 mixed oxide catalyst, Cab-O-Sil-supported, selective chemisorption of  $\text{NH}_3$  and  $\text{NO}$ , **109**, 25  
 polynuclear complex, as model mixed oxide catalyst, isomerization activity, **110**, 364
- Fe(110), adsorption and decomposition of methanol, Auger electron spectroscopy, **109**, 314
- $\text{Fe}^{2+}$ , effect on Pt particle formation in Y-type zeolites, **113**, 220
- $\text{Fe}^{3+}$ , and  $\text{Bi}^{3+} + \text{Fe}^{3+}$  ions,  $\text{MoO}_3$ -supported model catalysts, propene oxidation kinetics, **114**, 196  
 ( $\text{Fe,Cr}$ ) $_3\text{O}_4$  catalysts, slightly hydrated, adsorption and reaction with  $\text{CO}$ , differential pressure and FAB MS studies, **109**, 347
- Ni/ $\text{SiO}_2$  catalysts, characterization by EXAFS, **112**, 282
- promoted and unpromoted catalysts for  $\text{NH}_3$  synthesis, structure sensitivity, **114**, 457
- single-crystal surfaces, effects of potassium on  $\text{NH}_3$  synthesis, **109**, 51
- $\text{SiO}_2$ -supported catalysts  
 carbon filament growth, model, **109**, 241  
 hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317
- Iron nitride  
 $\zeta$ -,  $\epsilon$ -, and  $\gamma$ '-, unsupported catalysts in  $\text{H}_2$ - $\text{CO}$  mixtures, surface and bulk changes, **113**, 236
- Iron oxide, *see* Ferric oxide
- Isobutane  
 cracking over amorphous and crystalline aluminosilicates, mechanism, **112**, 565
- Isofluorophate  
 inclusion complexes with cyclodextrins, characterization, **112**, 464
- Isomerization  
 1-butene, catalyzed by macroporous ion-exchange resins, effects of local concentration and distribution of sulfonic acid groups, **113**, 434  
 cyclopropane and methylcyclopropane, characterization of polynuclear metal complexes, **110**, 364  
 2,2-dimethylbutane on Ir/ $\text{SiO}_2$  catalysts, role of surface carbonaceous layers and metal particle size, **111**, 77  
 hexanes,  $^{13}\text{C}$ -labeled, on  $\text{Al}_2\text{O}_3$ -supported Ir and Ir-Co catalysts, correlations between product distributions and catalyst structure, EXAFS study, **114**, 153  
 hydrocarbons on Mo and Mo/ $\text{Al}_2\text{O}_3$  catalysts, active site characterization, **113**, 569  
 methylcyclopentane and acyclic hexanes over Pt/ $\text{SiO}_2$  catalysts, kinetics, **112**, 290  
 toluene, [ $1\text{-}^{13}\text{C}$ ]-labeled, over H-ZSM-5 zeolites, **109**, 232  
 toluidine by H-ZSM-5 zeolites, **111**, 146  
 $\alpha,\beta$ -unsaturated alcohols on Rh/ $\text{AlPO}_4$  catalysts, **113**, 172
- o*-xylene over  $\text{AlPO}_4^{-5}$  catalysts, effects of thermal, hydrothermal, and acid-base treatments, **111**, 254
- Isooctane  
 catalytic reactions on HY zeolites, analysis, **113**, 353
- Isoprene  
 hydrogenation on  $\text{MoS}_2/\gamma\text{-Al}_2\text{O}_3$  catalysts, active site identification, **109**, 320
- Isopropyl alcohol  
 adsorption onto H-ZSM-5 zeolites, formation of stoichiometric complexes, analysis, **114**, 34  
 reactions in study of small aliphatic carbenium ion stability on zeolite and  $\text{SiO}_2\text{-Al}_2\text{O}_3$  catalysts, NMR spectroscopy, **114**, 167  
 synthesis from  $\text{C}_3\text{H}_6\text{-O}_2\text{-H}_2\text{O}$  mixture over Pd-Cu zeolites, **111**, 457
- Isotopic equilibration  
 $\text{N}_2$  over Raney Ru catalysts, importance of structural factor, **112**, 469
- ISS, *see* Ion scattering spectroscopy
- K
- Kieselguhr, *see* Infusorial earth
- L
- Lanthana  
 promoted Rh/ $\text{SiO}_2$  catalysts  
 CO and  $\text{H}_2$  adsorption and desorption, **109**, 61  
 CO hydrogenation studies, **111**, 325
- Lanthanum  
 coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330  
 $\text{La}^{3+}$ , effect on Pt particle formation in Y-type zeolites, **113**, 220
- Lanthanum aluminate  
 role in thermal stabilization of transition alumina, **114**, 112
- Lanthanum oxide  
 support of Sr catalysts, methane oxidative coupling, kinetics, **113**, 517
- Lithium  
 doped MgO catalysts, oxidative dehydrogenation of methane, blank reactor corrections, **111**, 317  
 promotion of ZnO catalysts, methane activation and oxidative dimerization, **112**, 366
- Luminescence spectroscopy  
 Eu-exchanged synthetic faujasite zeolites, **114**, 58
- M
- Magnesia, *see* Magnesium oxide
- Magnesium  
 doping of Pt/ $\text{TiO}_2$  catalysts, effect on performance, **113**, 106  
 -V-O catalysts, selective oxidative dehydrogenation of propane, **109**, 463

- Magnesium fluoride  
support of MoO<sub>3</sub> catalysts, surface structure and catalytic properties, **110**, 23
- Magnesium oxide  
and Al<sub>2</sub>O<sub>3</sub>, support of Ni catalysts, carbon filament growth, model, **109**, 241  
Co<sub>2</sub>(CO)<sub>8</sub> adsorbed onto, Co particle formation from, surface properties, analysis by IR spectroscopy of CO adsorption, **113**, 466  
Na<sup>+</sup>- and Rb<sup>+</sup>-doped catalysts, promoter effects in oxidative coupling of methane, **113**, 25  
pure and Li-doped catalysts, oxidative dehydrogenation of methane, blank reactor corrections, **111**, 317  
-SiO<sub>2</sub>, acid-modified, thermometric titration of surface acid sites, **111**, 227  
support of  
Mo(CO)<sub>6</sub> catalysts, surface properties, **114**, 347  
Rh catalysts, hydrogenation of dinitriles to aminonitriles, catalyst preparation and characterization, **112**, 145  
Ru catalysts  
prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388  
role in benzene hydrogenation, **111**, 429  
TEM study, **109**, 76  
sulfided Mo catalysts, effect on catalytic activity and properties, **110**, 275  
supported catalysts, origin of support effect, **112**, 595  
surface basicity, characterization by microcalorimetry and FTIR spectroscopy of adsorbed hexafluoroisopropanol, **109**, 378
- Magnetic susceptibility  
unsupported Co-promoted MoS<sub>2</sub> catalysts, **112**, 313  
Ziegler-Natta/SiO<sub>2</sub> model catalysts, evidence for reduced Ti clusters, **113**, 250
- Magnetite. *see* Ferrosulfuric oxide
- Maleic anhydride  
adsorption onto V<sub>2</sub>O<sub>5</sub>-P<sub>2</sub>O<sub>5</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 303
- Manganese  
-Ag composite oxide catalysts, oxidation of CO, **109**, 198  
coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330  
-Cu alloys, oxidation, in design and preparation of planar models of hopcalite oxidation catalysts, **113**, 267  
-Zn-Cr-K-oxide catalysts, preparation, activation, and catalytic behavior: synthesis of alcohols from carbon oxides and H<sub>2</sub>, **111**, 120
- Manganese oxide  
promoted Fe<sub>2</sub>O<sub>3</sub> catalysts, synthesis of acetone from ethanol, mechanism, **109**, 298
- Mass spectrometry  
fast atom bombardment, CO adsorption and reaction on slightly hydrated (Fe,Cr)<sub>3</sub>O<sub>4</sub> catalysts, **109**, 347  
imaging secondary ion, distribution of Ni and V on cracking catalysts, **109**, 387  
secondary ion, vanadium oxide-promoted Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, **110**, 410
- Mass transfer  
in H-ZSM-5 zeolites, effect of chemisorbed molecules, **114**, 186
- Mercury  
pore volumes and pore volume distributions, determination, **110**, 419
- Mesitylene  
effect on *n*-hexane hydroisomerization over Pt/mordenite catalysts, **111**, 425
- Metal catalysts  
etched, 430-SS, NH<sub>3</sub> decomposition, **112**, 590
- Metal oxides  
mixed, SiO<sub>2</sub>-supported catalysts, preparation by thermal decomposition of heteropoly metal complexes, characterization, **112**, 157
- Metal pyrophosphates  
supported catalysts, ethylbenzene oxydehydrogenation to styrene  
catalyst composition and reaction variables, **111**, 1  
microbalance studies of carbon deposition and burnoff, **111**, 14
- Metal-support effects  
acetone hydrogenation over Pt catalysts, **113**, 52
- Methanation  
carbon on Fe/Al<sub>2</sub>O<sub>3</sub> catalysts during Fischer-Tropsch synthesis, **113**, 13  
CO-H<sub>2</sub> mixtures over Ni/Al<sub>2</sub>O<sub>3</sub> catalysts, transient IR and isotopic study, **112**, 135  
CO on Ni(100), effect of sulfur, **110**, 243
- Methane  
activation  
over MoS<sub>2</sub> catalysts, CH<sub>*n*</sub> stabilities: molecular orbital theory analysis, **112**, 392  
and oxidative dimerization over Li-promoted ZnO catalysts, **112**, 366  
-ethyl alcohol product ratio from CO hydrogenation over Rh/ZrO<sub>2</sub> catalysts, modification, role of experimental parameters, **111**, 345  
oxidation  
over Mo/SiO<sub>2</sub> catalysts, effect of molybdosilicic acid formation on catalyst, **112**, 320  
partial, to formaldehyde by O<sub>2</sub> over MoO<sub>3</sub>/SiO<sub>2</sub> and related catalysts, **109**, 187  
on SiO<sub>2</sub>-supported heteropolyoxometalate catalysts  
effect of Ce addition to catalyst, **112**, 54  
nature and stability of supported species, **109**, 206  
oxidative coupling  
without catalysts, **113**, 144  
over Na-promoted Pr<sub>6</sub>O<sub>11</sub> catalysts, **114**, 422  
over Na<sup>+</sup>- and Rb<sup>+</sup>-doped MgO catalysts, promoter effects, **113**, 25  
over 1 wt% Sr/La<sub>2</sub>O<sub>3</sub> catalysts, kinetics, **113**, 517  
over Sb-based catalysts, **112**, 168

- oxidative dehydrogenation over pure and Li-doped MgO catalysts, blank reactor corrections, **111**, 317
- oxidative dimerization over Na<sup>+</sup>-promoted CaO catalysts, **111**, 302
- reactions over H-ZSM-5 zeolites, detection of reactive intermediates, **113**, 259
- Methanol**
- adsorption
- and decomposition on Fe(110), Auger electron spectroscopy, **109**, 314
- onto H-ZSM-5 zeolites, formation of stoichiometric complexes, analysis, **114**, 34
- in AlPO<sub>4</sub><sup>-5</sup>, sorption capacity and isotherms, **111**, 23
- <sup>14</sup>C-labeled, -propane mixtures, conversion to gasoline with H-ZSM-5 zeolites, **114**, 190
- conversion to gasoline over H-ZSM-5 zeolites
- benzene sequestration test for reaction intermediates, **110**, 310
- hydrogen transfer from C-14 ring labeled methylcyclohexane, **111**, 436
- gasoline reactions, in characterization of P-modified ZSM-5 zeolites, **112**, 453
- in methylation, ethylation, and propylation of benzene over H-ZSM-5 zeolites, **114**, 271
- oxidation
- on Ag-Pt alloys, **109**, 170
- on amorphous V<sub>2</sub>O<sub>5</sub> catalyst prepared by *in situ* activation of amorphous precursor, comparison with crystalline catalyst, **113**, 325
- over Mo/SiO<sub>2</sub>, effect of Mo dispersion, **109**, 354
- partial, over MoO<sub>3</sub> catalysts, mechanism, **114**, 398
- oxidative dehydrogenation over Ag catalysts, effect of N<sub>2</sub>O, **114**, 303
- synthesis
- over CuO/ZnO catalysts
- analysis, **114**, 440
- Cs-doped, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
- relationship to higher alcohol synthesis, **111**, 445
- on Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalysts
- Cs-doped, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
- mechanism, **109**, 263
- toluene mixtures, reactions over ZSM-5 zeolites, analysis, **114**, 17
- vapor-phase reaction with methyl acetate and acetic acid in presence of oxygen with V/Ti/P binary phosphate catalyst, **112**, 194
- Methyl acetate**
- and acetic acid, in vapor-phase reaction of methanol in presence of oxygen with V/Ti/P binary phosphate catalyst, **112**, 194
- Methylamine**
- decomposition and oxidation on polycrystalline Pt catalysts, steady-state kinetics and oscillations, **114**, 230
- Methylation**
- benzene with methanol over H-ZSM-5 zeolites, analysis, **114**, 271
- 2-Methyl-3-buten-2-ol**
- liquid-phase hydrogenation and isomerization on Rh/AlPO<sub>4</sub> catalysts, **113**, 172
- Methyl chloride**
- and Si in direct reaction for production of methylchlorosilanes, characterization of reactive areas, **114**, 259
- Methylchlorosilanes**
- production by direct process, characterization of reactive areas, **114**, 259
- Methylcyclohexane**
- C-14 ring labeled, hydrogen transfer during methanol conversion to gasoline over H-ZSM-5 zeolites, **111**, 436
- diffusion in ZSM-5 zeolites, measurement of coefficients, **114**, 1
- Methylcyclopentane**
- and acyclic hexanes, conversion over Pt/SiO<sub>2</sub> catalysts, isomerization kinetics and hydrogenolysis selectivities, **112**, 290
- formation from acyclic hexanes over Pt/SiO<sub>2</sub> catalysts, effects of partial pressure and temperature, **112**, 303
- reforming over bimetallic catalysts, effect of coke deposition on stability, **112**, 357
- Methylcyclopropane**
- isomerization, in characterization of polynuclear metal complexes, **110**, 364
- 1-Methyl-2-ethylbenzene**
- reactions with, in test for bifunctional catalysts, **110**, 348
- Methyl formate**
- synthesis over Cs-doped Cu/ZnO and Cu/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
- 2-Methylpentane**
- catalytic reactions on HY zeolites, analysis, **113**, 353
- conversion to methylcyclopentane over Pt/SiO<sub>2</sub> catalysts, effects of partial pressure and temperature, **112**, 303
- and methylcyclopentane, conversion over Pt/SiO<sub>2</sub> catalysts, isomerization kinetics and hydrogenolysis selectivities, **112**, 290
- 3-Methylpentane**
- conversion to methylcyclopentane over Pt/SiO<sub>2</sub> catalysts, effects of partial pressure and temperature, **112**, 303
- and methylcyclopentane, conversion over Pt/SiO<sub>2</sub> catalysts, isomerization kinetics and hydrogenolysis selectivities, **112**, 290
- Methylphenothiazine**
- cation formation over Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, and SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts, effects of Cu<sup>2+</sup>, **112**, 579
- 2-Methyl-2-propanol**, *see tert-Butyl alcohol*

- 2-Methyl-2-propen-1-ol  
liquid-phase hydrogenation and isomerization on Rh/AlPO<sub>4</sub> catalysts, **113**, 172
- Michael addition  
Ba(OH)<sub>2</sub>-catalyzed, effect of microcrystalline structure and nature of active sites on catalytic activity, **112**, 528
- Microcalorimetry  
in determination of surface basicity of various oxides, **109**, 378
- Models  
carbon filament growth on supported Ni, Fe, and Ni-Cu alloy catalysts, **109**, 241  
microscopic, high-pressure kinetics of NH<sub>3</sub> synthesis, **110**, 1  
planar, hopcalite oxidation catalysts, design and preparation, **113**, 267  
polynuclear metal complexes as mixed oxide catalysts, isomerization activity, **110**, 364  
promoted catalysts, PdCONa and [PdCONa]<sup>+</sup> complexes, theoretical study, **111**, 409  
Pt/C catalyst deactivation by oxygen, **112**, 337  
strong metal support interaction, CO and H<sub>2</sub> chemistry at Ru-Ti interface, **111**, 383  
thermal stabilization of transition alumina by structural coherence with LnAlO<sub>3</sub> (Ln = La, Nd, Pr), **114**, 112
- Molecular sieves  
desorption-diffusion of NH<sub>3</sub>-zeolite systems in, temperature-programmed desorption study: theory, **112**, 437  
and microporous solids, catalysis and physisorption, surface curvature effects, **110**, 58  
NH<sub>3</sub> desorption-diffusion in, temperature-programmed desorption study: application to partially decaionated Y-zeolites, **112**, 444
- Molybdena, *see* Molybdenum trioxide
- Molybdenum  
Al<sub>2</sub>O<sub>3</sub>-supported catalysts  
active sites, characterization, **113**, 569  
metallic, alkane hydrogenolysis, **113**, 567  
sulfidability and hydrodesulfurization, analysis, **112**, 516  
 $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported catalysts  
CO<sub>2</sub> and NO chemisorption, application in catalyst surface structure analysis, **113**, 307  
*M*-promoted (*M* = Co, Cr, Fe, Ir, Ni, Pd, Pt, Re, Rh, Ru), sulfided, C-N bond hydrogenolysis selectivity, promoter effects, **113**, 206  
carbon-supported catalysts, sulfidability and hydrodesulfurization, analysis, **112**, 516  
-Co/Al<sub>2</sub>O<sub>3</sub> hydrodesulfurization catalysts, Co-K edge in oxide and sulfided states, structure determination by EXAFS, **113**, 281  
-Co bulk sulfides, catalytic properties, effect of preparation method, **113**, 535  
-K-Co/Al<sub>2</sub>O<sub>3</sub> water-gas shift catalysts, oxidic precursors, laser Raman and IR studies, **112**, 93  
XMo<sub>2</sub>O<sub>40</sub> (*X* = As, Ge, P, Si), electronic structure and reduction behavior, **111**, 336  
-Ni catalysts  
Al<sub>2</sub>O<sub>3</sub>-supported, thiophene hydrodesulfurization, poisoning by nitrogen compounds, **110**, 375  
bulk sulfides, catalytic properties, effect of preparation method, **113**, 535  
presulfided,  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported, vapor-phase catalytic hydrodeoxygenation of benzofuran, **111**, 243  
SiO<sub>2</sub>-supported catalysts  
methanol oxidation, effect of Mo dispersion, **109**, 354  
molybdosilicic acid formation, relevance to methane oxidation, **112**, 320  
photoreduced in CO, valence state of Mo ions, **113**, 256  
sulfidability and hydrodesulfurization, analysis, **112**, 516  
subcarbonyl species encaged in NaY and HY zeolites, stoichiometry, **112**, 585  
surfaces, structure insensitivity in thiophene hydrodesulfurization catalysis, **110**, 423  
unsupported catalysts, active site characterization, **113**, 569
- Molybdenum carbide  
unsupported powder catalysts, topotactic synthesis, **112**, 44
- Molybdenum carbonyl  
derived supported Mo catalysts, CO oxidation with N<sub>2</sub>O, **111**, 50
- Molybdenum disulfide  
 $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported catalysts, isoprene hydrogenation, active site identification, **109**, 320  
carbon- and  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported hydrodesulfurization catalysts, phosphorus poisoning, **112**, 401  
catalysts, methane activation and CH<sub>n</sub> stabilities: molecular orbital theory analysis, **112**, 392  
exfoliated restacked catalysts, Al inclusions and precipitates, properties, **112**, 418  
metal oxide-supported catalysts, support effect on catalytic activity and properties, **110**, 275  
unsupported Co-promoted catalysts, electronic properties, **112**, 313
- $\gamma$ -Molybdenum nitride  
NH<sub>3</sub> adsorption onto, characterization by NMR spectroscopy, **112**, 556
- Molybdenum oxide  
sulfided, ZrO<sub>2</sub>-supported catalysts, thiophene hydrodesulfurization, ESR study, **111**, 88
- Molybdenum sulfides  
and nickel sulfides loaded into zeolites, activity for catalytic hydrogenation, **114**, 388
- Molybdenum trioxide  
Al<sub>2</sub>O<sub>3</sub>-supported catalysts reduced in H<sub>2</sub> at elevated temperatures, surface chemistry, **113**, 82  
catalytic anisotropy in oxidative ammonolysis of toluene, analysis, **114**, 332

- MgF<sub>2</sub>-supported catalysts, surface structure and catalytic properties, **110**, 23
- NiO sulfided catalysts,  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported hydrodenitrogenation of benzo(*f*)quinoline and benzo(*h*)quinoline, **112**, 411
- hydrogenation of substituted benzenes and phenols, **112**, 12
- partial oxidation of methanol, mechanism, **114**, 398
- role in selective oxidation of C<sub>4</sub> hydrocarbons, **113**, 529
- SiO<sub>2</sub>-supported catalysts
- characterization by low-temperature oxygen chemisorption, <sup>1</sup>H MAS NMR, and X-ray diffraction, **113**, 556
  - methane oxidation
    - effect of Ce addition to catalyst, **112**, 54
    - partial, by O<sub>2</sub> to formaldehyde, **109**, 187
    - photoreduction, **110**, 229
    - preparation by steam deposition, evaluation, **114**, 460
    - spectroscopic characterization and thermal reduction, **110**, 216
  - supported reduced catalysts, ethane homologation, **109**, 221
  - unsupported and SiO<sub>2</sub>-supported catalysts, acidity, pyridine adsorption study, **112**, 66
- 9-Molybdophosphate
- dimeric, adsorption onto  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, NMR study, **109**, 163
- 12-Molybdophosphate
- adsorption onto  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, NMR study, **109**, 163
- 12-Molybdophosphoric acid, *see* 12-Phosphomolybdic acid
- Molybdosilicic acid
- formation on Mo/SiO<sub>2</sub> catalysts, relevance to methane oxidation, **112**, 320
- Montmorillonite
- support of Pt(NH<sub>3</sub>)<sub>3</sub><sup>+</sup> catalysts, Pt reduction by hydrogen, **112**, 126
- Mordenite
- H-
    - acid site strength distribution, differential scanning calorimetry, **113**, 490
    - coke formation during polyethylene carbonization, analysis, **113**, 525
  - ion-exchanged, acidity characterization
    - by IR spectroscopy, **112**, 505
    - by temperature-programmed desorption of pyridine, **112**, 495
  - Na-, acid site strength distribution, differential scanning calorimetry, **113**, 490
- Neohexane
- hydrogenolysis over Aerosil-supported Rh-Cu catalysts, **111**, 374
- Neopentane
- cracking over solid acid catalysts, mechanism, **110**, 171
- Neutron scattering
- hydrogen adsorption onto Pt catalysts, **113**, 509
- Nickel
- Al<sub>2</sub>O<sub>3</sub>-supported catalysts
    - CO-H<sub>2</sub> reaction, isotopic study of chain growth, **110**, 354
    - hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317
    - methanation of CO-H<sub>2</sub> mixtures, transient IR and isotopic study, **112**, 135
  - catalysis of filamentous carbon growth and gasification, reversibility, **110**, 127
  - catalysts, CO hydrogenation, analysis by bond-order-conservation method, **113**, 341
  - coexchanged with Fe and Y-zeolites, characterization and catalytic studies, **110**, 330
  - Cu alloy, SiO<sub>2</sub>-supported catalysts, carbon filament growth, model, **109**, 241
  - distribution on cracking catalysts, imaging secondary ion mass spectrometry, **109**, 387
  - Fe/SiO<sub>2</sub> catalysts, characterization by EXAFS, **112**, 282
  - K catalysts, gasification of graphite by H<sub>2</sub>O, H<sub>2</sub>, and O<sub>2</sub>, controlled atmosphere electron microscopy study, **110**, 74
  - kieselguhr-supported catalysts, irreversible hydrogen transfer in cyclohexene disproportionation, kinetic and mechanistic study, **111**, 397
  - MgO(Al<sub>2</sub>O<sub>3</sub>)-supported catalysts, carbon filament growth, model, **109**, 241
  - Mo catalysts
    - Al<sub>2</sub>O<sub>3</sub>-supported, thiophene hydrodesulfurization, poisoning by nitrogen compounds, **110**, 375
    - bulk sulfides, catalytic properties, effect of preparation method, **113**, 535
    - presulfided,  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported, vapor-phase catalytic hydrodeoxygenation of benzofuran, **111**, 243
  - Ni(100), CO methanation, effect of sulfur, **110**, 243
  - and NiO in SiO<sub>2</sub>-supported catalysts, location, formation of two forms of NiO, and assignment of temperature-programmed reduction profiles, **114**, 217
  - particles
    - supported on TiO<sub>2</sub>-SiO<sub>2</sub> thin film, sintering and pit formation, **111**, 440
    - tunneling action in catalyzed graphite hydrogenation, **114**, 46
  - SiO<sub>2</sub>-supported catalysts
    - carbon filament growth, model, **109**, 241
    - chemisorption and interaction of hydrogen and oxygen, **112**, 107

## N

- Neodymium aluminate
- role in thermal stabilization of transition alumina, **114**, 112

- partly reduced, metal particle size determination by hydrogen/oxygen chemisorption and EXAFS, **114**, 463
- temperature-programmed desorption, experimental procedures for intraparticle diffusion analysis, **109**, 396
- Nickel monoxide
- MoO<sub>3</sub> sulfided catalysts,  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported, hydrogenation of substituted benzenes and phenols, **112**, 12
- Nickel oxide
- K<sub>4</sub>Nb<sub>6</sub>O<sub>17</sub> catalysts, photocatalytic decomposition of water, **111**, 67
  - MoO<sub>3</sub>/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> sulfided catalysts, hydrodenitrogenation of benzo(*f*)quinoline and benzo(*h*)quinoline, **112**, 411
- and Ni in SiO<sub>2</sub>-supported catalysts, location, formation of two forms of NiO, and assignment of temperature-programmed reduction profiles, **114**, 217
- Nickel sulfides
- and molybdenum sulfides loaded into zeolites, activity for catalytic hydrogenation, **114**, 388
- Niobia, *see* Niobium pentoxide
- Niobium pentoxide
- promotion of Rh/SiO<sub>2</sub> catalysts, ethane hydrogenolysis and H<sub>2</sub> chemisorption: probes for RhNbO<sub>4</sub> formation by strong Rh-Nb<sub>2</sub>O<sub>5</sub> interaction, **112**, 478
- Nitric oxide
- chemisorption on Mo/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalysts, in catalyst surface structure analysis, **113**, 307
- and CO
- interactions over Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, IR spectroscopic study, **109**, 89
  - reaction over SiO<sub>2</sub>-supported Pt and Pt-WO<sub>3</sub> catalysts, kinetics and promotional effects, **109**, 12
  - effect on CO-induced disruption of Rh/Al<sub>2</sub>O<sub>3</sub> crystallites, **112**, 183
  - on Rh/ $\alpha$ -Al<sub>2</sub>O<sub>3</sub>{0001} catalysts, temperature-programmed desorption study, **113**, 185
  - selective chemisorption on Cab-O-Sil-supported Cu-M (*M* = Al, Cr, Fe) mixed oxide catalysts, **109**, 25
  - selective reduction with NH<sub>3</sub> over V<sub>2</sub>O<sub>5</sub>/SiO<sub>2</sub> mixed gel catalysts, **111**, 273
- Nitrogen
- adsorption over NaA zeolites, apparent abnormal values, analysis, **113**, 540
  - C bond hydrogenolysis, selectivity dependence on promoter in sulfided MoM and M (*M* = Co, Cr, Fe, Ir, Ni, Pd, Pt, Re, Rh, Ru) catalysts, **113**, 206
  - compounds with, poisoning of Ni/Al<sub>2</sub>O<sub>3</sub>-catalyzed thiophene hydrodesulfurization, **110**, 375
  - pore volumes and pore volume distributions, determination, **110**, 419
  - sorption on zeolite omega, **111**, 94
- Nitrogen dioxide
- reduction by CO on polycrystalline Pt catalysts, steady-state kinetics, **114**, 207
- Nitrous oxide
- in CO oxidation on Mo(CO)<sub>6</sub>-derived supported Mo catalysts, **111**, 50
  - interaction with Ag in relation to oxidative dehydrogenation of methanol, assessment, **114**, 303
  - selective reduction with NH<sub>3</sub> over V<sub>2</sub>O<sub>5</sub>/SiO<sub>2</sub>-TiO<sub>2</sub> catalysts, analysis, **114**, 313
- Nuclear magnetic resonance
- <sup>13</sup>C, magic angle spinning, reactions of alcohols and propene on zeolite and SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts, **114**, 167
  - <sup>1</sup>H, magic angle spinning, in characterization of MoO<sub>3</sub>/SiO<sub>2</sub> and WO<sub>3</sub>/SiO<sub>2</sub> catalysts, **113**, 556
  - <sup>95</sup>Mo and <sup>31</sup>P, adsorption of phosphomolybdates on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, **109**, 163
  - NH<sub>3</sub> adsorption onto  $\gamma$ -Mo<sub>2</sub>N catalysts, **112**, 556
  - <sup>31</sup>P, phosphorus poisoning of Pt-Rh three-way catalyst, **109**, 37
- O
- Olefins
- epoxidation over Ag catalysts, surface atomic oxygen radical mechanism, **112**, 80
- Organic solutes
- photocatalytic oxidation over TiO<sub>2</sub>, kinetics, **111**, 264
- Osmium carbonyls
- zeolite-supported catalysts, water-gas shift reaction, **112**, 1
- Oxidation
- aldehydes on ZnO catalysts, alkyl elimination, relevance to allylic oxidation pathways, **113**, 497
  - benzene over vanadium oxide catalysts, evaluation, **113**, 334
- CO
- kinetics, effects of Ce addition to Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, **112**, 543
  - over Mn-Ag composite oxide catalysts, **109**, 198
  - over polycrystalline Pt catalysts, coupled oscillations, **113**, 453
  - and propene by iron oxide catalysts for autoemission control, **110**, 298
  - on Pt/SiO<sub>2</sub>, catalyst preparation effects on spatial propagation of oscillations, FTIR analysis, **110**, 249
  - on Pt/ZrO<sub>2</sub> polycrystalline catalysts
    - effect of electrochemical oxygen pumping on steady-state and oscillatory behavior, **111**, 170
    - mechanism, solid electrolyte potentiometric study, **111**, 152
  - over Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, autonomous oscillations, **110**, 197

- on SiO<sub>2</sub>-supported Pt and Pd catalysts, rapid FTIR transient studies, **110**, 319
- Cu–Mn alloys, in design and preparation of planar models of hopcalite oxidation catalysts, **113**, 267
- disruption of Rh/Al<sub>2</sub>O<sub>3</sub> crystallites, CO-induced, effect of NO, **112**, 183
- ethylene
  - to acetaldehyde over SiO<sub>2</sub>-supported molten-salt Wacker catalysts, analysis, **114**, 377
  - over Ag–Zn/αAl<sub>2</sub>O<sub>3</sub> catalysts, **109**, 143
  - carbon deposition during, analysis, **113**, 383
  - catalytic mechanism, kinetics, **109**, 236; reply, **109**, 238
  - on Pt/SiO<sub>2</sub> catalysts, associated sintering, **113**, 129
- H<sub>2</sub> on polycrystalline Ag catalysts, solid electrolyte potentiometric study, **113**, 295
- methane
  - and dehydrogenation over pure and Li-doped MgO catalysts, blank reactor corrections, **111**, 317
  - and dimerization over Na<sup>+</sup>-promoted CaO catalysts, **111**, 302
  - over Mo/SiO<sub>2</sub> catalysts, effect of molybdosilicic acid formation on catalyst, **112**, 320
  - on SiO<sub>2</sub>-supported heteropolyoxometalate catalysts
    - effect of Ce addition to catalyst, **112**, 54
    - nature and stability of supported species, **109**, 206
- methanol
  - on Ag–Pt alloys, **109**, 170
  - on amorphous V<sub>2</sub>O<sub>5</sub> catalyst prepared by *in situ* activation of amorphous precursor, comparison with crystalline catalyst, **113**, 325
  - over Mo/SiO<sub>2</sub>, effect of Mo dispersion, **109**, 354
- methylamine on polycrystalline Pt catalysts, steady-state kinetics and oscillations, **114**, 230
- partial
  - methane to formaldehyde by O<sub>2</sub> over MoO<sub>3</sub>/SiO<sub>2</sub> and related catalysts, **109**, 187
  - methanol over MoO<sub>3</sub> catalysts, mechanism, **114**, 398
- passivating, Al<sub>2</sub>O<sub>3</sub>- and SiO<sub>2</sub>-supported Pt catalysts, analysis, **114**, 354
- photocatalytic, organic solutes over TiO<sub>2</sub>, kinetics, **111**, 264
- propylene
  - on MoO<sub>3</sub>-supported model catalysts, kinetics, **114**, 196
  - over Sn–Sb oxide catalysts dispersed on SnO<sub>2</sub>, **109**, 423
- and reduction, consecutive and alternative, effect on catalyst–support interactions in Cu/TiO<sub>2</sub> catalysts, **113**, 220
- Oxidative coupling
  - methane
    - without catalysts, **113**, 144
  - over Na-promoted Pr<sub>6</sub>O<sub>11</sub> catalysts, evaluation, **114**, 422
  - over Na<sup>+</sup>- and Rb<sup>+</sup>-doped MgO catalysts, promoter effects, **113**, 25
  - over 1 wt% Sr/La<sub>2</sub>O<sub>3</sub> catalysts, kinetics, **113**, 517
  - over Sb-based catalysts, **112**, 168
- Oxides
  - XMo<sub>12</sub>O<sub>40</sub> (X = As, Ge, P, Si), electronic structure and reduction behavior, **111**, 336
- Oxydehydrogenation
  - ethylbenzene to styrene
    - on coke/Zr(HPO<sub>4</sub>)<sub>2</sub> · xH<sub>2</sub>O catalysts, kinetics, **112**, 221
    - over supported metal pyrophosphate catalysts
      - catalyst composition and reaction variables, **111**, 1
      - microbalance studies of carbon deposition and burnoff, **111**, 14
- Oxygen
  - adsorption onto
    - Ag–Pt alloys, **109**, 170
    - α-Cr<sub>2</sub>O<sub>3</sub> surface, nature and localization, IR spectroscopy, **111**, 421
  - chemisorption on Ni/SiO<sub>2</sub> catalysts, interaction with hydrogen, **112**, 107
  - C<sub>3</sub>H<sub>6</sub>–H<sub>2</sub>O mixture, in 2-propanol synthesis over Pd–Cu zeolites, **111**, 457
  - Cr–Zn catalysts, alcohol synthesis from carbon oxides and H<sub>2</sub>: temperature-programmed study of *n*-butanal, **111**, 360
  - deactivation of Pt/C catalysts
    - kinetics, **112**, 329
    - model, **112**, 337
  - electrochemical pumping, effect on steady-state and oscillatory behavior of CO oxidation on polycrystalline Pt/ZrO<sub>2</sub> catalysts, **111**, 170
  - hydrogen chemisorption, in metal particle size determination in partly reduced Ni/SiO<sub>2</sub> catalysts, **114**, 463
  - interaction with Al<sub>2</sub>O<sub>3</sub>- and SiO<sub>2</sub>-supported Rh catalysts, **112**, 201
  - lattice, evolution by interaction between V<sub>2</sub>O<sub>5</sub> and TiO<sub>2</sub>, promotion mechanism, **113**, 45
  - low-temperature chemisorption, in characterization of MoO<sub>3</sub>/SiO<sub>2</sub> and WO<sub>3</sub>/SiO<sub>2</sub> catalysts, **113**, 556
  - molecular, reduction, effect of *d*-state density and chemistry of transition metal cluster selenides, **112**, 384
  - partial oxidation of methane to formaldehyde over MoO<sub>3</sub>/SiO<sub>2</sub> and related catalysts, **109**, 187
  - in vapor-phase reaction of methanol with methyl acetate and acetic acid using V/Ti/P binary phosphate catalyst, **112**, 194
  - V–Mg catalysts, selective oxidative dehydrogenation of propane, **109**, 463
- Oxyradical anion
  - surface atomic, role in olefin epoxidation over Ag catalysts, **112**, 80

## P

- Palladium**  
Al<sub>2</sub>O<sub>3</sub>-supported catalysts  
active sites, determination by CS<sub>2</sub> titration, letter to editor, **110**, 203; reply, **110**, 206  
hydrogenation of but-1-yne, mechanism, **114**, 411  
irreversible hydrogen transfer in cyclohexene disproportionation, kinetic and mechanistic study, **111**, 397  
 $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported catalysts containing ceria, characterization, **114**, 23  
carbon-supported catalysts  
hydrogenation of HCO<sub>3</sub><sup>-</sup> to HCO<sub>2</sub><sup>-</sup> in aqueous solutions, **110**, 184  
oxidative carbonylation of aniline, effects of promoters, solvents, and reaction conditions, **114**, 246  
catalysts, CO hydrogenation, analysis by bond-order-conservation method, **113**, 341  
-CONa and [PdCONa]<sup>+</sup> complexes, as simple models of promoted catalysts, theoretical study, **111**, 409  
hydridocarbonyl and formyl complexes, relative stabilities, theoretical study, **112**, 34  
SiO<sub>2</sub>-supported catalysts  
CO adsorption  
benzene coadsorption and K promotion, **110**, 11  
electronic competition effect, **109**, 120  
CO oxidation, rapid FTIR transient studies, **110**, 319  
-ZnO-ZnCr<sub>2</sub>O<sub>4</sub> catalysts, structural analysis, **111**, 199
- Particles**  
catalyst, diffusivity determination, **111**, 460  
microstructure, effect on alkane hydrogenolysis on Rh/SiO<sub>2</sub> catalysts, **111**, 210  
Ni, supported on TiO<sub>2</sub>-SiO<sub>2</sub> thin film, sintering and pit formation, **111**, 440  
Pt, formation in Y-zeolites, effect of coexchanged metal cations, **113**, 220
- Particle size**  
effect on CO hydrogenation over Co/Al<sub>2</sub>O<sub>3</sub> catalysts, **113**, 544  
Ir catalysts, role in 2,2-dimethylbutane reactions, **111**, 77  
metal, in partly reduced Ni/SiO<sub>2</sub> catalysts, determination by hydrogen/oxygen chemisorption and EXAFS, **114**, 463
- Pentamolybdodiphosphate**  
adsorption onto  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, NMR study, **109**, 163
- Pentane**  
hydrogenolysis over Aerosil-supported Rh-Cu catalysts, **111**, 374  
reactions over H-ZSM-5 zeolites, detection of reactive intermediates, **113**, 259
- n-Pentylcyclohexane**  
diffusion in ZSM-5 zeolites, measurement of coefficients, **114**, 1
- pH**  
effects on structural stability, surface, and catalytic properties of AlPO<sub>4</sub><sup>5-</sup>, **111**, 254
- Phase behavior**  
surface, Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, effect on catalyst activity and selectivity in hydrogenation and hydrodesulfurization, **112**, 250
- Phenols**  
substituted, hydrogenation over sulfided NiO-MoO<sub>3</sub>/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalysts, role of electronic and steric factors, **112**, 12
- Phosphates**  
V-Ti binary, as catalysts  
physical and chemical properties and performance in aldol condensation, effects of organic compounds used in catalyst preparation, **113**, 562  
vapor-phase reaction of methanol with methyl acetate and acetic acid in presence of oxygen, **112**, 194
- 12-Phosphomolybdic acid**  
SiO<sub>2</sub>-supported catalysts, methane oxidation, effect of Ce addition to catalyst, **112**, 54
- Phosphorus**  
modification of ZSM-5 zeolites, spectroscopic and catalytic study, **112**, 453  
PMo<sub>12</sub>O<sub>40</sub> heteropolyanions, electronic structure and reduction behavior, **111**, 336  
poisoning of  
carbon-, and Al<sub>2</sub>O<sub>3</sub>-supported MoS<sub>2</sub> hydrodesulfurization catalysts, **112**, 401  
Pt-Rh three-way catalyst, <sup>31</sup>P NMR study, **109**, 37  
-V-Ti binary phosphate catalysts, vapor-phase reaction of methanol with methyl acetate and acetic acid in presence of oxygen, **112**, 194
- Phosphorus pentoxide**  
-V<sub>2</sub>O<sub>5</sub> catalysts, Al<sub>2</sub>O<sub>3</sub>-supported, adsorption of 1-butene, 1,3-butadiene, furan, 2,5H-furanone, and maleic anhydride, **109**, 303
- Photocatalysis**  
Ag deposition on powder TiO<sub>2</sub>, impact on selective Ag recovery from aqueous solution, **113**, 72  
organic solute oxidation over TiO<sub>2</sub>, kinetics, **111**, 264  
SrTiO<sub>3</sub> powder, calcination temperature effects, **111**, 296
- Photoreduction**  
MoO<sub>3</sub>/SiO<sub>2</sub> catalysts, **110**, 229  
Mo/SiO<sub>2</sub> catalysts in CO, valence state of Mo ions, **113**, 256
- Physisorption**  
and catalysis by microporous solids and molecular sieves, surface curvature effects, **110**, 58
- Pit formation**  
Ni particles supported on thin TiO<sub>2</sub>-SiO<sub>2</sub> film, **111**, 440
- Platinum**  
-Ag alloy catalysts, O<sub>2</sub> adsorption and methanol oxidation, **109**, 170

- alloy gauzes, etching of, surface area measurement, **113**, 475
- Al<sub>2</sub>O<sub>3</sub>-supported catalysts  
 crystallite migration as sintering mechanism, **109**, 433  
 irreversible hydrogen transfer in cyclohexene disproportionation, kinetic and mechanistic study, **111**, 397  
 passivating oxidation of Pt, **114**, 354  
 sintered, redispersion methods, **109**, 407  
 surface chemistry during preparation, laser Raman spectroscopy, **113**, 164  
 temperature-programmed reduction profiles, analysis, **111**, 59  
 thermal aging, temperature-programmed desorption spectroscopy, **110**, 285
- $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported catalysts, regeneration by hydrogen of coked reforming catalysts, role of chlorine, **111**, 235
- $\eta$ -Al<sub>2</sub>O<sub>3</sub>-supported catalysts, metal-support effects on acetone hydrogenation, **113**, 52
- Au-supported catalysts, metal-support effects on acetone hydrogenation, **113**, 52
- bifunctional catalysts, reaction tests with 1-methyl-2-ethylbenzene, **110**, 348
- carbon deposition during ethylene oxidation, analysis, **113**, 383
- carbon-supported catalysts, deactivation by oxygen kinetics, **112**, 329  
 model, **112**, 337
- catalysts, CO hydrogenation, analysis by bond-order-conservation method, **113**, 341
- film catalysts, cyclopentylamine hydrogenolysis, **110**, 407
- Ir/Al<sub>2</sub>O<sub>3</sub> catalysts  
 surface chemistry during preparation, laser Raman spectroscopy, **113**, 164  
 temperature-programmed reduction profiles, analysis, **111**, 59
- particles, tunneling action in catalyzed graphite hydrogenation, **114**, 46
- polycrystalline catalysts  
 CO oxidation, coupled oscillations, **113**, 453  
 methylamine decomposition and oxidation, steady-state kinetics and oscillations, **114**, 230  
 NO<sub>2</sub> reduction by CO, steady-state kinetics, **114**, 207
- powder catalysts, metal-support effects on acetone hydrogenation, **113**, 52
- and Pt-Re and Pt-Re-S reforming catalysts,  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported, effect of coke deposition on stability, **112**, 357
- Raney, catalysts, hydrogen adsorption, neutron scattering study, **113**, 509
- M (M = Re, Rh) catalysts, Al<sub>2</sub>O<sub>3</sub>-supported, in first stages of preparation, drying, and calcination, EXAFS studies, **110**, 209
- Rh catalysts  
 Al<sub>2</sub>O<sub>3</sub>-supported, sintered, redispersion methods, **109**, 407  
 three-way, phosphorus-poisoning, <sup>31</sup>P NMR study, **109**, 37
- single crystals, effects of surface structure and K and Na addition on activity and selectivity for 1,3-butadiene hydrogenation, **112**, 21
- SiO<sub>2</sub>-supported catalysts  
 conversion of methylcyclopentane and acyclic hexanes, isomerization kinetics and hydrogenolysis selectivities, **112**, 290
- CO oxidation  
 catalyst preparation effects on spatial propagation of oscillations, FTIR analysis, **110**, 249  
 rapid FTIR transient studies, **110**, 319  
 hydrogen adsorption, neutron scattering study, **113**, 509  
 metal-support effects on acetone hydrogenation, **113**, 52  
 methylcyclopentane formation from acyclic hexanes, effects of partial pressure and temperature, **112**, 303  
 passivating oxidation of Pt, **114**, 354  
 promotional effects of WO<sub>3</sub> addition on NO-CO reaction, FTIR kinetic study, **109**, 12  
 sintering during ethylene oxidation, **113**, 129
- small particles on amorphous Al<sub>2</sub>O<sub>3</sub> and  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>{0001}, temperature-programmed desorption of CO and H<sub>2</sub>, **110**, 191
- tetrammine cation, montmorillonite-supported catalysts, reduction by hydrogen, **112**, 126
- TiO<sub>2</sub>-supported catalysts  
 CO chemisorption, effects of dopants, **113**, 106  
 metal-support effects on acetone hydrogenation, **113**, 52  
 oxidative and reductive properties, ISS, AES, and ESCA study, **109**, 226  
 strong metal-support interaction  
 characterization, **111**, 136  
 role of electronic and geometric factors, **110**, 262  
 Ti<sup>3+</sup> ions at metal-support interface, EPR characterization, **113**, 96
- V<sub>2</sub>O<sub>3</sub>-supported catalysts, V<sub>2</sub>O<sub>3</sub> structural transformations during catalyst preparation, **111**, 189
- WO<sub>3</sub>-SiO<sub>2</sub>-supported catalysts, NO-CO reaction kinetics, FTIR study, **109**, 12
- Y-zeolite-encaged catalysts, hydrogen adsorption, neutron scattering study, **113**, 509
- Y-zeolite-supported catalysts, effect of coexchanged metal cations on Pt particle formation, **113**, 220
- $\Omega$ -zeolite bifunctional catalysts, preparation and properties, **114**, 321
- ZrO<sub>2</sub>-supported polycrystalline catalysts, CO oxidation  
 effect of electrochemical oxygen pumping on steady-state and oscillatory behavior, **111**, 170  
 mechanism, solid electrolyte potentiometric study, **111**, 152

- Point of zero charge  
  charged surface groups of SiO<sub>2</sub>, regulation by variation of solution temperature or modification with Na<sup>+</sup>, **109**, 41  
  TiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> composite, effect of dopant concentration, **114**, 433
- Poisoning  
  catalytic reactions, effect on surface electronic response, **110**, 243  
  MoS<sub>2</sub>/C and MoS<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> hydrodesulfurization catalysts by phosphorus, **112**, 401  
  Ni/Al<sub>2</sub>O<sub>3</sub>-catalyzed thiophene hydrodesulfurization by nitrogen compounds, **110**, 375  
  Pt-Rh three-way catalyst by phosphorus, <sup>31</sup>P NMR study, **109**, 37
- trans*-Polyacetylene  
  formation on transition metal zeolites, resonance Raman study, **111**, 453
- Polyethylene  
  carbonization over acidic zeolites, analysis, **113**, 525
- Polymerization  
  ethylene over highly dispersed Cr(III)/SiO<sub>2</sub> catalysts, **111**, 231
- Pore volumes  
  and volume distributions, determination from N<sub>2</sub> desorption mesopore and Hg intrusion macropore data, **110**, 419
- Porous catalysts  
  surface diffusion, theoretical and experimental aspects, letter to editor, **109**, 468; reply, **113**, 572
- Potassium  
  addition to Pt single crystals, effect on catalyst activity and selectivity for 1,3-butadiene hydrogenation, **112**, 21  
  -Co-Mo/Al<sub>2</sub>O<sub>3</sub> water-gas shift catalysts, oxidic precursors, laser Raman and IR studies, **112**, 93  
  doping of α-Sb<sub>2</sub>O<sub>4</sub> catalysts, oxidative coupling of methane, **112**, 168  
  effects on NH<sub>3</sub> synthesis over Fe single-crystal surfaces, **109**, 51  
  -Ni catalysts, gasification of graphite by H<sub>2</sub>O, H<sub>2</sub>, and O<sub>2</sub>, controlled atmosphere electron microscopy, **110**, 74  
  promotion of  
    CO adsorption onto  
      Pd/SiO<sub>2</sub> catalysts, **110**, 11  
      Rh/SiO<sub>2</sub> catalysts, **110**, 18  
    Cu-Co/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, direct synthesis of alcohols, **114**, 447  
  Fe catalysts  
    effect on structure sensitivity of NH<sub>3</sub> synthesis, **114**, 457  
    high-pressure kinetics of NH<sub>3</sub> synthesis, microscopic model, **110**, 1  
  -Zn-Mn-Cr-oxide catalysts, preparation, activation, and catalytic behavior: synthesis of alcohols from carbon oxides and H<sub>2</sub>, **111**, 120
- Potassium niobate  
  -NiO catalysts, photocatalytic decomposition of water, **111**, 67
- Potassium oxide  
  promotion of Rh/Al<sub>2</sub>O<sub>3</sub> catalysts, effect on CO-induced structural changes, IR analysis, **110**, 413
- Potentiometry  
  solid electrolyte-aided  
    CO oxidation on polycrystalline Pt/ZrO<sub>2</sub>, **111**, 152  
    H<sub>2</sub> oxidation on polycrystalline Ag catalysts, **113**, 295
- Praseodymium aluminate  
  role in thermal stabilization of transition alumina, **114**, 112
- Praseodymium oxide  
  Na-promoted catalysts, oxidative coupling of methane, **114**, 422
- Pressure  
  partial, effect on methylcyclopentane formation from acyclic hexanes over Pt/SiO<sub>2</sub> catalysts, **112**, 303
- Promoted catalysts  
  models, PdCONa and [PdCONa]<sup>+</sup> complexes, theoretical study, **111**, 409
- Propane  
  -[<sup>14</sup>C]methanol mixtures, conversion to gasoline with H-ZSM-5 zeolites, **114**, 190  
  hydrogenolysis on Rh/SiO<sub>2</sub> catalysts, effect of particle microstructure, **111**, 210  
  reactions over H-ZSM-5 zeolites, detection of reactive intermediates, **113**, 259  
  selective oxidative dehydrogenation over V-Mg-O catalysts, **109**, 463
- 2-Propanol, *see* Isopropyl alcohol
- Propene, *see* Propylene
- 2-Propen-1-ol, *see* Allyl alcohol
- Propionaldehyde  
  oxidation on ZnO catalysts, alkyl elimination, relevance to allylic oxidation pathways, **113**, 497
- Propylation  
  benzene with methanol over H-ZSM-5 zeolites, analysis, **114**, 271
- n*-Propylcyclohexane  
  diffusion in ZSM-5 zeolites, measurement of coefficients, **114**, 1
- Propylene  
  adsorption onto V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub> catalysts, associated reducibility of V(V) ions, effect of Na, **114**, 473  
  alkylation of benzene over H-ZSM-5 zeolites to produce cumene, **109**, 212  
  carbonization over hydrogen mordenite, EPR measurements under static conditions, **114**, 136  
  conversion over AlPO<sub>4</sub><sup>II</sup>, **113**, 263  
  -O<sub>2</sub>-H<sub>2</sub>O mixture, in 2-propanol synthesis over Pd-Cu zeolites, **111**, 457  
  oxidation  
    by iron oxides for autoemission control, **110**, 298  
    on MoO<sub>3</sub>-supported model catalysts, kinetics, **114**, 196  
    over Sn-Sb oxide catalysts dispersed on SnO<sub>2</sub>, **109**, 423

- reactions in study of small aliphatic carbenium ion stability on zeolite and  $\text{SiO}_2\text{-Al}_2\text{O}_3$  catalysts, NMR spectroscopy, **114**, 167
- Purifier  
water, with combination of adsorption and *in situ* photocatalytic regeneration, description, **113**, 549
- Pyridine  
adsorption, in analysis of  $\text{SiO}_2$ -supported  $\text{V}_2\text{O}_5$ ,  $\text{MoO}_3$ , and  $\text{TiO}_2$  catalyst acidities, **112**, 66  
in  $\text{AlPO}_4^{5-}$ , sorption capacity, isotherms, and thermodynamics, **111**, 23  
temperature-programmed desorption, in acidity characterization of ion-exchanged mordenite, **112**, 495
- R
- Raman spectroscopy  
with ellipsometry, hydrogenation of carbon species on Co catalysts, **110**, 37  
laser,  $\text{Al}_2\text{O}_3$ -supported Pt and Ir catalyst systems, **113**, 164  
oxidic precursors of K-Co-Mo/ $\text{Al}_2\text{O}_3$  water gas shift catalysts, **112**, 93  
resonance, *trans*-polyacetylene formation on transition metal zeolites, **111**, 453
- Redispersion  
sintered Pt, Rh, and Pt/Rh catalysts, **109**, 407
- Reduction  
behavior of  $X\text{Mo}_{12}\text{O}_{40}$  ( $X = \text{As, Ge, P, Si}$ ) heteropolyanions, **111**, 336  
extent, effect on CO hydrogenation over  $\text{Co}/\text{Al}_2\text{O}_3$  catalysts, **113**, 544  
molecular oxygen, effect of *d*-state density and chemistry of transition metal cluster selenides, **112**, 384  
 $\text{MoO}_3/\text{Al}_2\text{O}_3$  catalysts in  $\text{H}_2$  at elevated temperatures, associated surface chemistry, **113**, 82  
 $\text{NO}_2$  by CO on polycrystalline Pt catalysts, steady-state kinetics, **114**, 207  
and oxidation, consecutive and alternative, effect on catalyst-support interactions in  $\text{Cu}/\text{TiO}_2$  catalysts, **113**, 120  
photo-, *see* Photoreduction  
Pt( $\text{NH}_3$ ) $_4^{2+}$ /montmorillonite catalysts by hydrogen, **112**, 126  
selective, NO with  $\text{NH}_3$  over  
 $\text{V}_2\text{O}_5/\text{SiO}_2$  mixed gel catalysts, **111**, 273  
 $\text{V}_2\text{O}_5/\text{SiO}_2\text{-TiO}_2$  catalysts, **114**, 313  
solid state, Na ions in NaY zeolite by electron bombardment, **111**, 433  
temperature-programmed, *see* Temperature-programmed reduction  
thermal,  $\text{MoO}_3/\text{Al}_2\text{O}_3$  catalysts, **110**, 216  
V(V) ions during propene adsorption onto  $\text{V}_2\text{O}_5/\text{TiO}_2$  catalysts, effect of Na, **114**, 473
- Regeneration  
coked Pt/ $\gamma\text{-Al}_2\text{O}_3$  reforming catalysts by hydrogen, role of chlorine, **111**, 235
- Rhenium  
-Pt catalysts,  $\text{Al}_2\text{O}_3$ -supported, in first stages of preparation, drying, and calcination, EXAFS studies, **110**, 209  
-Pt and Pt-Re-S reforming catalysts,  $\gamma\text{-Al}_2\text{O}_3$ -supported, effect of coke deposition on stability, **112**, 357  
surfaces, structure sensitivity in thiophene hydrodesulfurization catalysis, **110**, 423
- Rhodium  
 $\text{Al}_2\text{O}_3$ -supported catalysts  
CO- $\text{H}_2$  reaction, effect of support on catalytic performance, kinetic study, **110**, 159  
CO-induced disruption of crystallites, effect of NO, **112**, 183  
CO, NO, and CO + NO behavior, IR spectroscopic study, **109**, 89  
CO oxidation  
autonomous oscillations, **110**, 197  
kinetics, effects of Ce addition, **112**, 543  
interaction with  $\text{H}_2$  and  $\text{O}_2$ , **112**, 201  
promoter effects on CO-induced structural changes, IR analysis, **110**, 413  
sintered, redispersion methods, **109**, 407  
 $\alpha\text{-Al}_2\text{O}_3\{0001\}$ -supported catalysts, NO on, temperature-programmed desorption study, **113**, 185  
 $\text{AlPO}_4$ -supported catalysts, liquid-phase hydrogenation and isomerization of  $\alpha,\beta$ -unsaturated alcohols, **113**, 172  
-Au catalysts, support effects on metal-metal interaction, **111**, 41  
-Cu catalysts, Aerosil-supported, preparation and activity for alkane reactions, **111**, 374  
hydridocarbonyl and formyl complexes, relative stabilities, theoretical study, **112**, 34  
MgO-supported catalysts, hydrogenation of dinitriles to aminonitriles, catalyst preparation and characterization, **112**, 145  
-Pt catalysts  
 $\text{Al}_2\text{O}_3$ -supported  
in first stages of preparation, drying, and calcination, EXAFS studies, **110**, 209  
sintered, redispersion methods, **109**, 407  
three-way, phosphorus-poisoning,  $^{31}\text{P}$  NMR study, **109**, 37
- $\text{SiO}_2$ -supported catalysts  
alkane hydrogenolysis, effect of particle microstructure, **111**, 210  
CO adsorption, benzene coadsorption and K promotion, **110**, 18  
CO- $\text{H}_2$  reaction, effect of support on catalytic performance, kinetic study, **110**, 159  
interaction with  $\text{H}_2$  and  $\text{O}_2$ , **112**, 201  
 $\text{La}_2\text{O}_3$ -promoted  
CO and  $\text{H}_2$  adsorption and desorption, **109**, 61  
CO hydrogenation studies, **111**, 325  
 $\text{Nb}_2\text{O}_5$ -promoted, ethane hydrogenolysis and  $\text{H}_2$  chemisorption: probes for  $\text{RhNbO}_4$  formation by strong Rh-Nb $_2\text{O}_5$  interaction, **112**, 478

- promoter effects on CO-induced structural changes, IR analysis, **110**, 413
- reactivity of carbon deposited on catalyst surface by CO disproportionation, **111**, 464
- Sn/SiO<sub>2</sub> catalysts, prepared from Sn(*n*-C<sub>4</sub>H<sub>9</sub>)<sub>4</sub>, characterization, **112**, 210
- TiO<sub>2</sub>-supported catalysts
- characterization by TEM and image processing, **111**, 353
- CO-H<sub>2</sub> reaction
- effect of support on catalytic performance, kinetic study, **110**, 159
- IR spectroscopic study, **112**, 176
- electronic interactions, **109**, 1
- hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317
- reactivity of carbon deposited on catalyst surface by CO disproportionation, **111**, 464
- strong metal-support interaction, role of electronic and geometric factors, **110**, 262
- ZrO<sub>2</sub>-supported catalysts, CO hydrogenation: role of experimental parameters in modification of C<sub>2</sub>H<sub>5</sub>OH/CH<sub>4</sub> product ratio, **111**, 345
- Rhodium carbonyls
- SiO<sub>2</sub>- and Al<sub>2</sub>O<sub>3</sub>-supported catalysts, generation and characterization under mild conditions, **110**, 96
- Ring opening
- cyclopropanes on Cu/Cab-O-Sil catalysts, detection and role of unreduced Cu species, **114**, 478
- Rubidium
- Rb<sup>+</sup>-doped MgO catalysts, promoter effects in oxidative coupling of methane, **113**, 25
- Ruthenium
- Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>-supported catalysts, benzene hydrogenation, role of support, **111**, 429
- Al<sub>2</sub>O<sub>3</sub>-supported catalysts
- CO activated adsorption sites and CO-H surface complex, detection, **113**, 444
- vanadium oxide-promoted, secondary ion mass spectrometry, **110**, 410
- γ-Al<sub>2</sub>O<sub>3</sub>-supported catalysts
- containing partial monolayers of adsorbed sulfur, hydrogenation and hydrodesulfurization, **112**, 229
- prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
- sulfided, hydrogenation and hydrodesulfurization, effect of surface phase behavior on activity and selectivity, **112**, 250
- catalyst particles, graphite hydrogenation mechanism, **111**, 220
- graphite-supported catalysts, benzene hydrogenation, role of support, **111**, 429
- KY-zeolite-supported catalysts, CO hydrogenation, identification of surface species by *in situ* chemical trapping, **113**, 1
- MgO-supported catalysts
- benzene hydrogenation, role of support, **111**, 429
- origin of support effect, **112**, 595
- prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
- TEM study, **109**, 76
- NaX zeolite-supported catalysts, CO adsorption-desorption processes, **113**, 398
- particles, tunneling action in catalyzed graphite hydrogenation, **114**, 46
- Raney
- isotopic equilibration reaction of N<sub>2</sub>, importance of structural factor, **112**, 469
- surface characterization, effect of heat treatment, **114**, 200
- SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>-supported catalysts, benzene hydrogenation, role of support, **111**, 429
- SiO<sub>2</sub>-supported catalysts
- prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
- TEM study, **109**, 76
- Ti interface, CO and hydrogen chemistry, SMSI model studies, **111**, 383
- TiO<sub>2</sub>-supported catalysts prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
- zeolite-supported catalysts, CO hydrogenation, effect of Si/Al ratio on secondary reactions, **110**, 47
- Rutile, *see* Titanium dioxide, rutile

## S

## Selenides

- transition metal cluster, chemistry, effect on electrocatalysis of hydrogen evolution and molecular oxygen reduction in acid medium, **112**, 384

## Sequestration test

- benzene, for reaction intermediates in methanol conversion to gasoline over H-ZSM-5 zeolites, **110**, 310

## Silanol

- groups in ZSM-5 zeolites
- annealing by steaming, letter to editor, **104**, 484; comment, **109**, 470
- clustering, letter to editor, **109**, 472

Silica, *see* Silicon dioxide

## Silicon

- Al ratio, effect on secondary reactions during CO hydrogenation on zeolite-supported metal catalysts, **110**, 47
- and methyl chloride in direct reaction for production of methylchlorosilanes, characterization of reactive areas, **114**, 259
- SiMo<sub>12</sub>O<sub>40</sub> heteropolyanions, electronic structure and reduction behavior, **111**, 336

## Silicon carbide

- high-specific-surface, as chemically inert catalytic support with high thermal resistance, synthesis and applications, **114**, 176

## Silicon dioxide

- Al<sub>2</sub>O<sub>3</sub> catalysts
  - isobutane cracking, mechanism, **112**, 565
  - methylphenothiazine cation formation, effect of Cu<sup>2+</sup>, **112**, 579
  - in study of small aliphatic carbenium ion stability, NMR spectroscopy, **114**, 167
- Al<sub>2</sub>O<sub>3</sub> stabilization and resistance to vanadium attack under severe high-temperature conditions, **111**, 450
- Al<sub>2</sub>O<sub>3</sub>, support of Ru catalysts, role in benzene hydrogenation, **111**, 429
- γ-Al<sub>2</sub>O<sub>3</sub>, support of MoO<sub>3</sub> catalysts, C<sub>2</sub>H<sub>6</sub> homologation, **109**, 221
- catalysts, methylphenothiazine cation formation, effect of Cu<sup>2+</sup>, **112**, 579
- charged surface groups, regulation by variation of solution temperature or modification with Na<sup>+</sup>, **109**, 41
- Co<sub>2</sub>(CO)<sub>8</sub> adsorbed onto, Co particle formation from, surface properties, analysis by IR spectroscopy of CO adsorption, **113**, 466
- gel, as adsorbent, and support of TiO<sub>2</sub> catalysts in adsorption water purifier with *in situ* photocatalytic regeneration, **113**, 549
- H<sub>2</sub> spillover on, induction of catalytic activity, kinetics and mechanism, **112**, 116
- MgO, acid-modified, thermometric titration of surface acid sites, **111**, 227
- support of
  - Cr(III) highly dispersed catalysts, ethylene polymerization, **111**, 231
  - Fe catalysts
    - carbon filament growth, model, **109**, 241
    - hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317
  - Fe-Ni catalysts, characterization by EXAFS, **112**, 282
  - heteropolyoxometalate catalysts, methane oxidation
    - effect of Ce addition to catalyst, **112**, 54
    - nature and stability of supported species, **109**, 206
  - Ir catalysts, 2,2-dimethylbutane reactions, role of surface carbonaceous layers and metal particle size, **111**, 77
  - La<sub>2</sub>O<sub>3</sub>-promoted Rh catalysts, CO hydrogenation studies, **111**, 325
  - mixed metal oxide catalysts, catalyst preparation by thermal decomposition of heteropoly metal complexes, characterization, **112**, 157
- Mo catalysts
  - methanol oxidation, effect of Mo dispersion, **109**, 354
  - molybdosilicic acid formation, relevance to methane oxidation, **112**, 320
  - photoreduced in CO, valence state of Mo ions, **113**, 256
  - sulfidability and hydrodesulfurization, analysis, **112**, 516

Mo(CO)<sub>6</sub> catalysts, surface properties, **114**, 347  
 molten-salt Wacker catalysts for oxidation of ethylene to acetaldehyde, development, **114**, 377

MoO<sub>3</sub> catalysts

- acidity, pyridine adsorption study, **112**, 66
- characterization by low-temperature oxygen chemisorption, <sup>1</sup>H MAS NMR, and X-ray diffraction, **113**, 556
- photoreduction, **110**, 229
- preparation by steam deposition, evaluation, **114**, 460
- reduced, ethane homologation, **109**, 221
- spectroscopic characterization and thermal reduction, **110**, 216

Nb<sub>2</sub>O<sub>5</sub>-promoted Rh catalysts, ethane hydrogenolysis and H<sub>2</sub> chemisorption: probes for RhNbO<sub>4</sub> formation by strong Rh-Nb<sub>2</sub>O<sub>5</sub> interaction, **112**, 478

## Ni catalysts

- chemisorption and interaction of hydrogen and oxygen, **112**, 107
- location of Ni and NiO, formation of two forms of NiO, and assignment of temperature-programmed reduction profiles, **114**, 217
- partly reduced, metal particle size determination by hydrogen/oxygen chemisorption and EXAFS, **114**, 463
- temperature-programmed desorption, experimental procedures for intraparticle diffusion analysis, **109**, 396

Ni-Cu alloy catalysts, carbon filament growth, model, **109**, 241

## Pd catalysts

- CO adsorption
  - effect of benzene coadsorption and K promotion, **110**, 11
  - electronic competition effect, **109**, 120
- CO oxidation, rapid FTIR transient studies, **110**, 319

## Pt catalysts

- acetone hydrogenation, metal-support effects, **113**, 52
  - conversion of methylcyclopentane and acyclic hexanes, isomerization kinetics and hydrogenolysis selectivities, **112**, 290
  - CO oxidation
    - catalyst preparation effects on spatial propagation of oscillations, FTIR analysis, **110**, 249
    - rapid FTIR transient studies, **110**, 319
  - methylcyclopentane formation from acyclic hexanes, effects of partial pressure and temperature, **112**, 303
  - passivating oxidation of Pt, **114**, 354
  - promotional effects of WO<sub>3</sub> addition in NO-CO reaction, FTIR study, **109**, 12
  - sintering during ethylene oxidation, **113**, 129
- Rh-Au catalysts, effects on metal-metal interaction, **111**, 41

- Rh carbonyl catalysts, generation and characterization under mild conditions, **110**, 96
- Rh catalysts
- alkane hydrogenolysis, effect of particle microstructure, **111**, 210
  - CO adsorption, benzene coadsorption and K promotion, **110**, 18
  - CO and H<sub>2</sub> adsorption and desorption, **109**, 61
  - CO-H<sub>2</sub> reaction, effect of support on catalytic performance, kinetic study, **110**, 159
  - interaction with H<sub>2</sub> and O<sub>2</sub>, **112**, 201
  - promoter effects on CO-induced Rh structural changes, IR analysis, **110**, 413
  - reactivity of carbon deposited on catalyst surface by CO disproportionation, **111**, 464
- Rh-Sn catalysts, prepared from Sn(*n*-C<sub>4</sub>H<sub>9</sub>)<sub>4</sub>, characterization, **112**, 210
- Ru catalysts
- prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
  - TEM study, **109**, 76
- $\alpha$ -Sb<sub>2</sub>O<sub>4</sub> and K-doped Sb<sub>2</sub>O<sub>4</sub> catalysts, oxidative coupling of methane, **112**, 168
- sulfided Mo catalysts, effect on catalytic activity and properties, **110**, 275
- TiO<sub>2</sub> catalysts
- acidity, pyridine adsorption study, **112**, 66
  - spectroscopic characterization, **112**, 489
- V<sub>2</sub>O<sub>5</sub> catalysts, acidity, pyridine adsorption study, **112**, 66
- V<sub>2</sub>O<sub>5</sub> mixed gel catalysts, structural properties and catalytic behavior in selective reduction of NO with NH<sub>3</sub>, **111**, 273
- WO<sub>3</sub> catalysts, characterization by low-temperature oxygen chemisorption, <sup>1</sup>H MAS NMR, and X-ray diffraction, **113**, 556
- Ziegler-Natta catalysts, magnetic susceptibility: evidence for reduced Ti clusters, **113**, 250
- surface basicity, characterization by microcalorimetry and FTIR spectroscopy of adsorbed hexafluoroisopropanol, **109**, 378
- TiO<sub>2</sub>
- support of V<sub>2</sub>O<sub>5</sub> catalysts for selective reduction of NO with NH<sub>3</sub>, preparation and performance, **114**, 313
  - thin film, support of Ni particles, sintering and pit formation, **111**, 440
- WO<sub>3</sub>, support of Pt catalysts, NO-CO reaction kinetics, FTIR study, **109**, 12
- Silver
- Al<sub>2</sub>O<sub>3</sub>-supported catalysts, sintering in various chemical environments, **109**, 100
  - catalysis of olefin epoxidation, surface atomic oxygen radical mechanism, **112**, 80
  - interaction with N<sub>2</sub>O in relation to oxidative dehydrogenation of methanol, assessment, **114**, 303
  - Mn composite oxide catalysts, oxidation of CO, **109**, 198
  - photocatalytic deposition on powder TiO<sub>2</sub>, impact on selective recovery from aqueous solution, **113**, 72
  - polycrystalline catalysts, H<sub>2</sub> oxidation, solid electrolyte potentiometric study, **113**, 295
  - Pt alloy catalysts, O<sub>2</sub> adsorption and methanol oxidation, **109**, 170
  - Zn,  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>-supported catalysts, ethylene oxidation, **109**, 143
- Sintering
- Ag/Al<sub>2</sub>O<sub>3</sub> catalysts, effect of various chemical environments, **109**, 100
  - Ni particles supported on thin TiO<sub>2</sub>-SiO<sub>2</sub> film, **111**, 440
  - Pt/SiO<sub>2</sub> catalysts during ethylene oxidation, **113**, 129
- SMSI, *see* Strong metal-support interaction
- Sodium
- addition to Pt single crystals, effect on catalyst activity and selectivity for 1,3-butadiene hydrogenation, **112**, 21
  - effect on reducibility of V(V) ions during propene adsorption onto V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub> catalysts, **114**, 473
  - ionic, modification of SiO<sub>2</sub>, regulation of point of zero charge, surface dissociation constants and concentration of charged surface groups, **109**, 41
  - Na<sup>+</sup>-doped MgO catalysts, promoter effects in oxidative coupling of methane, **113**, 25
  - PdCO and [PdCONa]<sup>+</sup> complexes, as simple models of promoted catalysts, theoretical study, **111**, 409
  - promotion of
    - CaO catalysts, oxidative dimerization of methane, **111**, 302
    - Pr<sub>6</sub>O<sub>11</sub> catalysts, oxidative coupling of methane, **114**, 422
  - solid state reduction in NaY zeolite by electron bombardment, **111**, 433
- Sodium oxide
- catalyzed CO<sub>2</sub> gasification of carbon, mechanism, **109**, 329
- Solids
- microporous, and molecular sieves, catalysis and physisorption, surface curvature effects, **110**, 58
- Solvents
- effect on oxidative carbonylation of aniline over Pd/C catalysts, **114**, 246
- Sorption
- alcohols and hydrocarbons in AlPO<sub>4</sub>, capacity, isotherms, and thermodynamics, **111**, 23
  - zeolite omega, properties, **111**, 94
- Stabilization
- thermal, transition alumina by structural coherence with LnAlO<sub>3</sub> (Ln = La, Nd, Pr), analysis, **114**, 112
- Stannic oxide
- Sb oxide catalysts dispersed on SnO<sub>2</sub>, structure and activity for propene oxidation, **109**, 423

- d*-State density  
effect on electrocatalysis of hydrogen evolution and molecular oxygen reduction in acid medium, **112**, 384
- Steam  
annealing of internal silanol groups in ZSM-5 zeolites, letter to editor, **104**, 484; comment, **109**, 470  
deposition in preparation of MoO<sub>3</sub>/SiO<sub>2</sub> catalysts, evaluation, **114**, 460  
modification of ZSM-5 zeolite acid sites, IR analysis, **110**, 404  
treatment of Y- and LZ-210 zeolites, catalytic cracking studies and characterization, **114**, 71
- Strong metal-support interaction  
model studies, CO and hydrogen chemistry at Ru-Ti interface, **111**, 383  
Pt/SiO<sub>2</sub> system, characterization, **111**, 136  
Rh-Nb<sub>2</sub>O<sub>5</sub>, RhNbO<sub>4</sub> formation, chemical probing by ethane hydrogenolysis and H<sub>2</sub> chemisorption over Nb<sub>2</sub>O<sub>5</sub>-promoted Rh/SiO<sub>2</sub> catalysts, **112**, 478
- Strontium  
La<sub>2</sub>O<sub>3</sub>-supported catalysts, methane oxidative coupling, kinetics, **113**, 517
- Strontium titanate  
powder, calcination temperature, effects on photocatalytic activities, **111**, 296
- Structure  
AlPO<sub>4</sub><sup>5-</sup> catalysts, stability, effects of thermal, hydrothermal, and acid-base treatments, **111**, 254  
Co-Mo/Al<sub>2</sub>O<sub>3</sub> hydrodesulfurization catalysts, Co-K edge in oxide and sulfided states, determination by EXAFS, **113**, 281  
electronic  
XMo<sub>12</sub>O<sub>40</sub> (X = As, Ge, P, Si) heteropolyanions, **111**, 336  
zeolites, X-ray photoelectron spectroscopy, **112**, 427  
Fe catalysts, promoted and unpromoted, effect on NH<sub>3</sub> synthesis, **114**, 457  
malachite-like precursors of CuO-ZnO catalysts, **109**, 367  
microcrystalline, Ba(OH)<sub>2</sub> catalysts, effect on activity in organic reactions, **112**, 528  
Raney Ru catalysts, role in isotopic equilibration of N<sub>2</sub>, **112**, 469  
Sb oxide in Sn-Sb oxide catalysts dispersed on SnO<sub>2</sub>, **109**, 423  
sensitivity in heterogeneous catalysis: activity and yield/selectivity relationships, **114**, 277  
surface, MoO<sub>3</sub>/MgF<sub>2</sub> catalysts, **110**, 23  
V<sub>2</sub>O<sub>5</sub>/SiO<sub>2</sub> mixed gel catalysts in selective reduction of NO with NH<sub>3</sub>, **111**, 273  
V<sub>2</sub>O<sub>3</sub>, transformations during Pt/V<sub>2</sub>O<sub>3</sub> catalyst preparation, **111**, 189  
ZnO-ZnCr<sub>2</sub>O<sub>4</sub>-Pd catalysts, **111**, 199
- Styrene  
formation from ethylbenzene by oxydehydrogenation on coke/Zr(HPO<sub>4</sub>)<sub>2</sub> · xH<sub>2</sub>O catalysts, kinetics, **112**, 221  
over supported metal pyrophosphate catalysts catalyst composition and reaction variables, **111**, 1  
microbalance studies of carbon deposition and burnoff, **111**, 14
- Sulfidability  
Mo catalysts supported on Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, and carbon, analysis, **112**, 516
- Sulfonic acid groups  
local concentration and distribution, effects on 1-butene isomerization catalyzed by macroporous ion-exchange resins, **113**, 434
- Sulfur  
adsorbed as partial monolayers on Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, hydrogenation and hydrodesulfurization, **112**, 229  
effect on methanation of CO on Ni(100), **110**, 243  
-Pt-Re/γ-Al<sub>2</sub>O<sub>3</sub> reforming catalysts, effect of coke deposition on stability, **112**, 357
- Sulfur dioxide  
modified Claus reaction with H<sub>2</sub>S on NaX zeolites, UV-visible spectroscopic study, **109**, 252
- Surface chemistry  
MoO<sub>3</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts reduced in H<sub>2</sub> at elevated temperatures, **113**, 82  
during preparation of Al<sub>2</sub>O<sub>3</sub>-supported Pt and Ir catalyst systems, **113**, 164
- Surfaces  
acid-modified SiO<sub>2</sub>-MgO, acid sites, thermometric titration, **111**, 227  
AlPO<sub>4</sub> catalysts precipitated with NH<sub>4</sub>OH, effect of starting Al salt, **111**, 106  
AlPO<sub>4</sub><sup>5-</sup> catalysts, effects of thermal, hydrothermal, and acid-base treatments, **111**, 254  
carbonaceous layers on Ir/SiO<sub>2</sub> catalysts, role in 2,2-dimethylbutane reactions, **111**, 77  
carbon deposition by CO disproportionation on Rh/TiO<sub>2</sub> and Rh/SiO<sub>2</sub> catalysts, reactivity of carbon, **111**, 464  
CO-H complex on Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, detection, **113**, 444  
α-Cr<sub>2</sub>O<sub>3</sub>, oxygen adsorption, nature and localization, IR spectroscopy, **111**, 421  
curvature, effects in physisorption and catalysis by microporous solids and molecular sieves, **110**, 58  
diffusion in porous catalysts, theoretical and experimental aspects, letter to editor, **109**, 468; reply, **113**, 572  
dissociation constants, charged surface groups of SiO<sub>2</sub>, regulation by variation of solution temperature or modification with Na<sup>+</sup>, **109**, 41  
Fe single-crystal, NH<sub>3</sub> synthesis, effect of K, **109**, 51  
iron nitride catalyst changes in H<sub>2</sub>/CO mixtures, **113**, 236  
Mo(CO)<sub>6</sub> supported catalysts, properties, **114**, 347  
Pt alloy gauzes, etching of, analysis, **113**, 475

- Pt single crystals, structure, effect on catalyst activity and selectivity for 1,3-butadiene hydrogenation, **112**, 21
- Raney Ru, characterization: effect of heat treatment, **114**, 200
- Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, phase behavior, effect on catalyst activity and selectivity in hydrogenation and hydrodesulfurization, **112**, 250
- RuKY catalysts, reactive species in CO hydrogenation reactions, identification by *in situ* chemical trapping, **113**, 1
- Si, reactive areas in the direct process for production of methylchlorosilanes, characterization, **114**, 259
- Synthesis
- CO with H<sub>2</sub> over ZrO<sub>2</sub> catalysts, **109**, 284
  - dimethylamine over small-pore H-RHO zeolites, **113**, 367
  - direct, alcohols on K-promoted Cu-Co/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, analysis, **114**, 447
  - Fischer-Tropsch, *see* Fischer-Tropsch synthesis
  - methanol
    - and C<sub>2</sub> oxygenate synthesis over Cs-doped Cu/ZnO and Cu/ZnO-Al<sub>2</sub>O<sub>3</sub> catalysts, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
    - on Cu/ZnO catalysts, analysis, **114**, 440
  - NH<sub>3</sub> on promoted and unpromoted Fe catalysts, structure sensitivity, **114**, 457
  - selective, dimethylamine over small-pore zeolites, effects of impurities, **114**, 8
  - SiC, high-specific-surface, as chemically inert catalytic support with high thermal resistance, **114**, 176
  - topotactic,  $\alpha$ -MoC<sub>1-x</sub> ( $x = 0.5$ ) unsupported powder catalysts, **112**, 44
- Synthesis gas conversion
- secondary reactions on metal-zeolite catalysts, **113**, 193
- T**
- Tantalum
- doping of Pt/TiO<sub>2</sub> catalysts, effect on performance, **113**, 106
- TEM, *see* Transmission electron microscopy
- Temperature
- calcination, SrTiO<sub>3</sub> powder, effects on photocatalytic activities, **111**, 296
  - effects on
    - methylcyclopentane formation from acyclic hexanes over Pt/SiO<sub>2</sub> catalysts, **112**, 303
    - product distribution and kinetics of *n*-hexadecane reactions on H-Y zeolites, **109**, 274
    - structural stability, surface, and catalytic properties of AlPO<sub>4</sub><sup>-5</sup>, **111**, 254
  - solution, regulation of SiO<sub>2</sub> charged surface groups, **109**, 41
  - support, metal, and gas phase, simultaneous measurement by *in situ* IR spectroscopy, **110**, 103
- Temperature-programmed desorption
- CO and H<sub>2</sub>
    - adsorption onto Cu/ZnO catalysts, **110**, 117
    - in analysis of small Pt particles on amorphous Al<sub>2</sub>O<sub>3</sub> and  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>{0001}, **110**, 191
  - NH<sub>3</sub> desorption-diffusion in molecular sieves: application to partially decationated Y-zeolites, **112**, 444
  - NH<sub>3</sub>-zeolite system desorption-diffusion in molecular sieves: theory, **112**, 437
  - NO on Rh/ $\alpha$ -Al<sub>2</sub>O<sub>3</sub>{0001} catalysts, **113**, 185
  - from porous catalysts, experimental procedures for analysis of intraparticle diffusion, **109**, 396
  - Pt/Al<sub>2</sub>O<sub>3</sub> thermal aging, **110**, 285
  - pyridine, in acidity characterization of ion-exchanged mordenite, **112**, 495
- Temperature-programmed reduction
- metal-supported catalysts, profile analysis, **111**, 59
  - NiO and Ni in SiO<sub>2</sub>-supported catalysts, profile assignments, **114**, 217
- Temperature-programmed surface reaction
- n*-butanal on Zn-Cr-O catalysts, **111**, 360
- Tetrabutyl tin
- reaction with Rh/SiO<sub>2</sub>, generated bimetallic catalysts, characterization, **112**, 210
- Thermodesorption
- H<sub>2</sub> from Al<sub>2</sub>O<sub>3</sub>- and SiO<sub>2</sub>-supported Rh catalysts, **112**, 201
- Thianaphthene
- deuterium exchange over hydrodesulfurization catalysts, model complex and heterogeneous reactor studies, **113**, 36
- Thiophene
- hydrodesulfurization
    - on carbon-covered Al<sub>2</sub>O<sub>3</sub>-supported catalysts, enhancement by support, **114**, 291
    - on NiMo/Al<sub>2</sub>O<sub>3</sub> catalysts, poisoning by nitrogen compounds, **110**, 375
    - over Ru/Al<sub>2</sub>O<sub>3</sub> catalysts containing partial monolayers of adsorbed sulfur, **112**, 229
    - over sulfided Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, effect of surface phase behavior on catalyst activity and selectivity, **112**, 250
    - over transition metal surfaces: structure insensitivity over Mo and structure sensitivity over Rh, **110**, 423
    - on ZrO<sub>2</sub>-supported sulfided molybdenum oxide catalysts, ESR study, **111**, 88
- Thoria, *see* Thorium oxide
- Thorium oxide
- surface basicity, characterization by microcalorimetry and FTIR spectroscopy of adsorbed hexafluoroisopropanol, **109**, 378
- Tin
- Rh/SiO<sub>2</sub> catalysts, prepared from Sn(*n*-C<sub>4</sub>H<sub>9</sub>)<sub>4</sub>, characterization, **112**, 210
- Titania, *see* Titanium dioxide
- Titanium
- clusters in Ziegler-Natta/SiO<sub>2</sub> catalysts, magnetic susceptibility studies, **113**, 250

- Ru interface, CO and hydrogen chemistry: SMSI model studies, **111**, 383
- Ti<sup>3+</sup> ions at metal-support interface of Pt/TiO<sub>2</sub> catalysts, EPR characterization, **113**, 96
- V binary phosphate catalysts
  - physical and chemical properties and performance in aldol condensation, effects of organic compounds used in catalyst preparation, **113**, 562
  - vapor-phase reaction of methanol with methyl acetate and acetic acid in presence of oxygen, **112**, 194
- Titanium dioxide
  - Al<sub>2</sub>O<sub>3</sub> composite, point of zero charge, effect of dopant concentration, **114**, 433
  - anatase, support of Cu catalysts, effect of consecutive and alternative oxidation and reduction on catalyst-support interactions, **113**, 120
  - colloidal, on SiO<sub>2</sub> gel, and Degussa P25 catalysts, water purification with combination of adsorption and *in situ* photocatalytic regeneration, **113**, 549
  - photocatalyst, organic solute oxidation, kinetics, **111**, 264
  - powder, photocatalytic deposition of Ag, impact on selective Ag recovery from aqueous solution, **113**, 72
  - rutile, support of Cu catalysts, effect of consecutive and alternative oxidation and reduction on catalyst-support interactions, **113**, 120
  - SiO<sub>2</sub>
    - support of V<sub>2</sub>O<sub>5</sub> catalysts for selective reduction of NO with NH<sub>3</sub>, preparation and performance, **114**, 313
    - thin film, support of Ni particles, sintering and pit formation, **111**, 440
  - SiO<sub>2</sub>-supported catalysts, spectroscopic characterization, **112**, 489
  - support of
    - Mo(CO)<sub>6</sub> catalysts, surface properties, **114**, 347
    - MoO<sub>3</sub> catalysts, reduced, ethane homologation, **109**, 221
    - Pt catalysts
      - acetone hydrogenation, metal-support effects, **113**, 52
      - dopant effects on performance, **113**, 106
      - oxidative and reductive properties, ISS, AES, and ESCA study, **109**, 226
      - strong metal-support interaction, role of electronic and geometric factors, **110**, 262
      - strong metal-support interaction state, characterization, **111**, 136
      - Ti<sup>3+</sup> ions at metal-support interface, EPR characterization, **113**, 96
    - Rh-Au catalysts, effects on metal-metal interaction, **111**, 41
    - Rh catalysts
      - characterization by TEM and image processing, **111**, 353
- CO-H<sub>2</sub> reaction
  - effect of support on catalytic performance, kinetic study, **110**, 159
  - IR spectroscopic study, **112**, 176
  - electronic interactions, **109**, 1
  - hydrogen chemisorption, comparison with other supported metal catalysts, **113**, 317
  - reactivity of carbon deposited on catalyst surface by CO disproportionation, **111**, 464
  - strong metal-support interaction, role of electronic and geometric factors, **110**, 262
  - Ru catalysts prepared from molecular Ru carbonyl clusters, support effects on catalyst structure and stability, **110**, 388
  - sulfided Mo catalysts, effect on catalytic activity and properties, **110**, 275
  - V<sub>2</sub>O<sub>5</sub> catalysts
    - associated reducibility of V(V) ions, effect of Na, **114**, 473
    - evolution of lattice oxygen, promotion mechanism, **113**, 45
    - surface basicity, characterization by microcalorimetry and FTIR spectroscopy of adsorbed hexafluoroisopropanol, **109**, 378
    - unsupported and SiO<sub>2</sub>-supported catalysts, acidity, pyridine adsorption study, **112**, 66
- Titration
  - thermometric, surface acid sites of acid-modified SiO<sub>2</sub>-MgO, **111**, 227
- Toluene
  - [1-<sup>13</sup>C]-labeled, isomerization over H-ZSM-5 zeolites, **109**, 232
  - effects on *n*-hexane hydroisomerization over Pt/mordenite catalysts, **111**, 425
  - methanol mixtures, reactions over ZSM-5 zeolites, analysis, **114**, 17
  - oxidative ammonolysis over MoO<sub>3</sub> catalysts, associated catalytic anisotropy, **114**, 332
  - synthesis from 1-butene over AlPO<sub>4</sub><sup>11</sup>, **110**, 150
- Toluidine
  - isomerization by H-ZSM-5 zeolites, **111**, 146
- Transition metal sulfides
  - carbon-supported catalysts, hydrodenitrogenation activity, periodic trends, **109**, 217
- Transmission electron microscopy
  - external coke deposits on USHY, H-OFF, and H-ZSM-5 zeolites, **114**, 100
  - and image processing, in characterization of Rh/TiO<sub>2</sub> catalysts, **111**, 353
  - MgO- and SiO<sub>2</sub>-supported Ru catalysts, **109**, 76
- 2,2,4-Trimethylpentane, *see* Isooctane
- Triphenylcarbinol
  - reactions in study of small aliphatic carbenium ion stability on zeolite and SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts, NMR spectroscopy, **114**, 167
- Triphenylmethanol, *see* Triphenylcarbinol
- Tungsten
  - doping of Pt/TiO<sub>2</sub> catalysts, effect on performance, **113**, 106

- Tungsten oxides  
 unsupported and Al<sub>2</sub>O<sub>3</sub>-supported, X-ray photoelectron and ion scattering studies, **110**, 139
- Tungsten trioxide  
 Al<sub>2</sub>O<sub>3</sub>-supported catalysts, acidity comparison with ultrastable faujasite catalysts, **111**, 286  
 SiO<sub>2</sub>-supported catalysts, characterization by low-temperature oxygen chemisorption, <sup>1</sup>H MAS NMR, and X-ray diffraction, **113**, 556  
 -SiO<sub>2</sub>, support of Pt catalysts, NO-CO reaction kinetics, FTIR study, **109**, 12
- Tunneling  
 group VIII metal particles, in catalyzed graphite hydrogenation, **114**, 46
- U
- Uranium  
 dopant in chemically inert high-specific-surface SiC catalytic support with high thermal resistance, synthesis and applications, **114**, 176
- UV-visible spectroscopy  
 modified Claus reaction on NaX zeolites, **109**, 252
- V
- Valence states  
 Mo ions in Mo/SiO<sub>2</sub> catalysts photoreduced in CO, **113**, 256
- Vanadia, *see* Vanadium pentoxide
- Vanadium  
 distribution on cracking catalysts, imaging secondary ion mass spectrometry, **109**, 387  
 -Mg-O catalysts, selective oxidative dehydrogenation of propane, **109**, 463  
 -Ti binary phosphate catalysts  
 physical and chemical properties and performance in aldol condensation, effects of organic compounds used in catalyst preparation, **113**, 562  
 vapor-phase reaction of methanol with methyl acetate and acetic acid in presence of oxygen, **112**, 194  
 tolerance of SiO<sub>2</sub>-stabilized Al<sub>2</sub>O<sub>3</sub> under severe high-temperature conditions, **111**, 450  
 V(V) ions, reducibility during propene adsorption onto V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub> catalysts, effect of Na, **114**, 473
- Vanadium oxides  
 catalytic activity in benzene oxidation, evaluation, **113**, 334  
 promotion of Ru/Al<sub>2</sub>O<sub>3</sub> catalysts, characterization by secondary ion mass spectrometry, **110**, 410
- Vanadium pentoxide  
 catalyst prepared by *in situ* activation of amorphous precursor, methanol oxidation, comparison with crystalline catalyst, **113**, 325  
 -P<sub>2</sub>O<sub>5</sub> catalysts, Al<sub>2</sub>O<sub>3</sub>-supported, adsorption of 1-butene, 1,3-butadiene, furan, 2,5H-furanone, and maleic anhydride, **109**, 303
- SiO<sub>2</sub>-supported catalysts, methane oxidation, effect of Ce addition to catalyst, **112**, 54  
 SiO<sub>2</sub>-supported mixed gel catalysts, structural properties and catalytic behavior in selective reduction of NO with NH<sub>3</sub>, **111**, 273  
 SiO<sub>2</sub>-TiO<sub>2</sub>-supported catalysts for selective reduction of NO with NH<sub>3</sub>, preparation and performance, **114**, 313  
 TiO<sub>2</sub>-supported catalysts  
 associated reducibility of V(V) ions, effect of Na, **114**, 473  
 evolution of lattice oxygen, promotion mechanism, **113**, 45  
 unsupported and SiO<sub>2</sub>-supported catalysts, acidity, pyridine adsorption study, **112**, 66
- Vanadium trioxide  
 support of Pt catalysts, structural transformations during catalyst preparation, **111**, 189
- Vapor-phase reaction  
 methanol with methyl acetate and acetic acid in presence of oxygen with V/Ti/P binary phosphate catalyst, **112**, 194
- W
- Wacker catalyst  
 molten-salt, SiO<sub>2</sub>-supported, for oxidation of ethylene to acetaldehyde, development, **114**, 377
- Water  
 adsorption purification with *in situ* photocatalytic regeneration, description, **113**, 549  
 -C<sub>3</sub>H<sub>6</sub>-O<sub>2</sub> mixture, in 2-propanol synthesis over Pd-Cu zeolites, **111**, 457  
 -gas shift reaction  
 on Cr<sub>2</sub>O<sub>3</sub>-promoted Fe<sub>3</sub>O<sub>4</sub> and supported Cu catalysts, comparison, **112**, 325  
 over industrial catalysts, dynamic study, **112**, 345  
 K-Co-Mo/Al<sub>2</sub>O<sub>3</sub> catalysts for, laser Raman and IR studies of oxidic precursors, **112**, 93  
 over zeolite-supported Os<sub>3</sub>(CO)<sub>12</sub> catalysts, **112**, 1  
 photocatalytic decomposition over NiO-K<sub>4</sub>Nb<sub>6</sub>O<sub>17</sub> catalysts, **111**, 67  
 sorption on zeolite omega, **111**, 94
- Wittig-Horner process  
 Ba(OH)<sub>2</sub>-catalyzed, effect of microcrystalline structure and nature of active sites on catalytic activity, **112**, 528
- X
- XPS, *see* X-ray photoelectron spectroscopy
- X-ray diffraction  
 in characterization of MoO<sub>3</sub>/SiO<sub>2</sub> and WO<sub>3</sub>/SiO<sub>2</sub> catalysts, **113**, 556  
 TiO<sub>2</sub>/SiO<sub>2</sub> catalysts, **112**, 489
- X-ray photoelectron spectroscopy  
 coke distribution on ZSM-5, **109**, 126  
 TiO<sub>2</sub>/SiO<sub>2</sub> catalysts, **112**, 489  
 tungsten oxides and WO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalysts, **110**, 139  
 zeolite electronic structure, **112**, 427

*o*-Xylene

isomerization over  $\text{AlPO}_4^{-5}$  catalysts, effects of thermal, hydrothermal, and acid–base treatments, **111**, 254

*p*-Xylene

effects on *n*-hexane hydroisomerization over Pt/mordenite catalysts, **111**, 425

## Xylenes

synthesis from 1-butene over  $\text{AlPO}_4^{11}$ , **110**, 150

## Z

## Zeolites

acidic, polyethylene carbonization, analysis, **113**, 525

catalysis and physisorption, surface curvature effects, **110**, 58

Co–ZSM-5 catalysts, secondary reactions in synthesis gas conversion, **113**, 193

electronic structure, X-ray photoelectron spectroscopy, **112**, 427

erionite, *n*-decane cracking, enhancement of light hydrocarbon formation by zeolite field gradient, **114**, 121

## faujasite

*n*-decane cracking, enhancement of light hydrocarbon formation by zeolite field gradient, **114**, 121

Eu-exchanged synthetic, luminescence spectroscopy, **114**, 58

## H-M

isobutane cracking, mechanism, **112**, 565

in study of small aliphatic carbenium ion stability, NMR spectroscopy, **114**, 167

H-OFF, external coke deposition, electron microscopic and EELS studies, **114**, 100

H-RHO, small-pore, selective synthesis of dimethylamine

analysis, **113**, 367

effects of impurities, **114**, 8

## H-Y

catalytic reactions of branched paraffins, analysis, **113**, 353

engagement of Mo subcarbonyl species, stoichiometry, **112**, 585

*n*-hexadecane reactions, product distribution and kinetics, temperature effects, **109**, 274

isobutane cracking, mechanism, **112**, 565

nickel sulfide and molybdenum sulfide-loaded, activity for catalytic hydrogenation, **114**, 388

in study of small aliphatic carbenium ion stability, NMR spectroscopy, **114**, 167

support of  $\text{Mo}(\text{CO})_6$ -derived Mo catalysts, CO oxidation with  $\text{N}_2\text{O}$ , **111**, 50

hydrogen mordenite, coke formation by reaction of olefins, EPR measurements

under on-stream conditions, **114**, 144

under static conditions, **114**, 136

## H-ZSM-5

alkylation of benzene with propylene to produce cumene, **109**, 212

catalysis of [ $^{13}\text{C}$ ]-labeled toluene isomerization, **109**, 232

conversion of [ $^{14}\text{C}$ ]methanol–propane mixtures to gasoline, **114**, 190

cumene cracking, kinetics, **109**, 180

external coke deposition, electron microscopic and EELS studies, **114**, 100

hydrogen transfer from C-14 ring labeled methylcyclohexane during methanol conversion to gasoline, **111**, 436

isobutane cracking, mechanism, **112**, 565

location of Brønsted acid sites and mass transfer in, effect of chemisorbed molecules, **114**, 186

methanol conversion to gasoline, benzene sequestration test for reaction intermediates, **110**, 310

methylation, ethylation, and propylation of benzene with methanol, **114**, 271

reactions of *n*-alkanes, detection of reactive intermediates, **113**, 259

stoichiometric adsorption complexes, analysis, **114**, 34

in study of small aliphatic carbenium ion stability, NMR spectroscopy, **114**, 167

toluidine isomerization, **111**, 146

–ZnO catalysts, aromatization of *n*-hexane, mechanism, **114**, 284

KY, support of Ru catalysts, CO hydrogenation, identification of surface species by *in situ* chemical trapping, **113**, 1

LZ-210, steamed, catalytic cracking studies and characterization, **114**, 71

## mordenite

dealuminated, characterization, **110**, 82

*n*-decane cracking, enhancement of light hydrocarbon formation by zeolite field gradient, **114**, 121

NaA, apparent abnormal adsorption of nitrogen and adsorption of helium, analysis, **113**, 540

NaH-ZSM-5, heterogeneity of hydroxide groups in, IR spectroscopy, **114**, 368

## NaX

CO adsorption–desorption processes, **113**, 398

modified Claus reaction, UV–visible spectroscopic study, **109**, 252

support of Ru catalysts, CO adsorption–desorption processes, **113**, 398

## NaY

engagement of Mo subcarbonyl species, stoichiometry, **112**, 585

and  $M\text{NaY}$  ( $M = \text{Ca}^{2+}, \text{Fe}^{2+}, \text{La}^{3+}$ ), support of Pt catalysts, effect of coexchanged metal cations on Pt particle formation, **113**, 220

solid state reduction of Na ion by electron bombardment, **111**, 433

- NH<sub>3</sub> system, desorption-diffusion in molecular sieves, temperature-programmed desorption study: theory, **112**, 437
  - offretite, *n*-decane cracking, enhancement of light hydrocarbon formation by zeolite field gradient, **114**, 121
  - omega
    - Pt bifunctional catalysts, preparation and properties, **114**, 321
    - sorption properties, **111**, 94
  - Pd-Cu, 2-propanol synthesis from C<sub>3</sub>H<sub>6</sub>-O<sub>2</sub>-H<sub>2</sub>O mixture, **111**, 457
  - Pt/mordenite catalysts, *n*-hexane hydroisomerization, effects of aromatic cofeeds, **111**, 425
  - Si/Al ratios, effect on secondary reactions during CO hydrogenation on supported metal catalysts, **110**, 47
  - 13X, support of Os<sub>3</sub>(CO)<sub>12</sub> catalysts, water-gas shift reaction, **112**, 1
  - transition metal, *trans*-polyacetylene formation, resonance Raman study, **111**, 453
  - USHY, external coke deposition, electron microscopic and EELS studies, **114**, 100
  - X-, hydrolysis of Eu cations, FTIR spectroscopy, **114**, 53
  - Y-
    - coexchanged with Fe and second polyvalent cation, characterization and catalytic studies, **110**, 330
    - partially decationated, NH<sub>3</sub> desorption-diffusion in molecular sieves, temperature-programmed desorption study, **112**, 444
    - steamed, catalytic cracking studies and characterization, **114**, 71
  - ZSM-5
    - acid site modification by steaming, IR analysis, **110**, 404
    - annealing of internal silanol groups by steaming, letter to editor, **104**, 484; comment, **109**, 470
    - clustering of silanol groups, letter to editor, **109**, 472
    - coke distribution, XPS study, **109**, 126
    - n*-decane cracking, enhancement of light hydrocarbon formation by zeolite field gradient, **114**, 121
    - diffusion of cyclohexanes, measurement of coefficients, **114**, 1
    - P-modified, spectroscopic and catalytic study, **112**, 453
    - reactions of toluene-methanol mixtures, analysis, **114**, 17
    - type Na-, H-, and Pt/H-pentasil catalysts, selectivity in *n*-hexane transformations, H<sub>2</sub> effects, **109**, 156
  - Ziegler-Natta catalysts
    - SiO<sub>2</sub>-supported, magnetic susceptibility: evidence for reduced Ti clusters, **113**, 250
  - Zinc
    - Ag catalysts,  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>-supported, ethylene oxidation, **109**, 143
    - Cr-O catalysts, alcohol synthesis from carbon oxides and H<sub>2</sub>: temperature-programmed study of *n*-butanal, **111**, 360
    - Mn-Cr-K-oxide catalysts, preparation, activation, and catalytic behavior: synthesis of alcohols from carbon oxides and H<sub>2</sub>, **111**, 120
  - Zinc chromate
    - ZnO-Pd catalysts, structural analysis, **111**, 199
  - Zinc oxide
    - Al<sub>2</sub>O<sub>3</sub>, support of
      - Cu catalysts
        - Cs-doped, methanol and C<sub>2</sub> oxygenate synthesis, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
        - methanol synthesis, mechanism, **109**, 263
        - water-gas shift reaction, comparison with Cr<sub>2</sub>O<sub>3</sub>-promoted Fe<sub>3</sub>O<sub>4</sub> catalysts, **112**, 325
      - Cu-Co catalysts, K-promoted, direct synthesis of alcohols, **114**, 447
      - CuO catalysts, ethanol formation from synthesis gas, mechanism, **114**, 90
    - CuO, malachite-like precursors, structural characterization, **109**, 367
    - H-ZSM-5 catalysts, aromatization of *n*-hexane, mechanism, **114**, 284
  - Li-promoted catalysts, methane activation and oxidative dimerization, **112**, 366
  - promoted Fe<sub>2</sub>O<sub>3</sub> catalysts, synthesis of acetone from ethanol, mechanism, **109**, 298
  - support of
    - Cu catalysts
      - CO and H<sub>2</sub> adsorption, temperature-programmed desorption and IR study, **110**, 117
      - Cs-doped, methanol and C<sub>2</sub> oxygenate synthesis, selectivity and <sup>13</sup>C incorporation patterns, **113**, 410
      - methanol synthesis, **114**, 440
    - CuO catalysts, methanol and higher alcohol syntheses, relationship, **111**, 445
    - reduced MoO<sub>3</sub> catalysts, ethane homologation, **109**, 221
  - ZnCr<sub>2</sub>O<sub>4</sub>-Pd catalysts, structural analysis, **111**, 199
- Zirconia, *see* Zirconium oxide
- Zirconium oxide
  - catalysis of CO/H<sub>2</sub> isosynthesis reactions, mechanism, **109**, 284
  - support of
    - Mo(CO)<sub>6</sub> catalysts, surface properties, **114**, 347
    - Pt polycrystalline catalysts, CO oxidation
      - effect of electrochemical oxygen pumping on steady-state and oscillatory behavior, **111**, 170
      - mechanism, solid electrolyte potentiometric study, **111**, 152

reduced MoO<sub>3</sub> catalysts, ethane homologation, **109**, 221

Rh catalysts, CO hydrogenation, role of experimental parameters in modification of C<sub>2</sub>H<sub>5</sub>OH/CH<sub>4</sub> product ratio, **111**, 345

sulfided molybdenum oxide catalysts, thiophene hydrodesulfurization, ESR study, **111**, 88

Zirconium phosphate

support of coke catalyst in ethylbenzene oxyhydrogenation, **112**, 221