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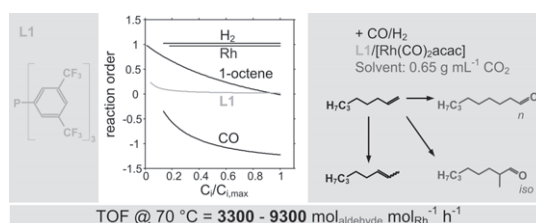
Articles

Ard C.J. Koeken, Leo J.P. van den Broeke, Berth-Jan Deelman, Jos T.F. Keurentjes

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Full kinetic description of 1-octene hydroformylation in a supercritical medium

► Mathematical model of kinetics of 1-octene hydroformylation in supercritical CO₂. ► The reaction is first order in hydrogen and rhodium. ► Increasing phosphine ligand concentration improves selectivity and activity. ► 1-Octene reaction order shifts from one to below zero with increasing concentration. ► Rhodium with trifluoromethylated phosphine allows for high turnover frequencies.

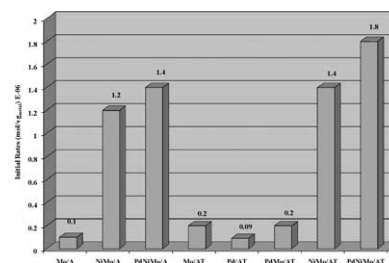


A. Aguirre-Gutiérrez, J.A. Montoya de la Fuente, J.A. de los Reyes, P. del Angel, A. Vargas

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Palladium effect over Mo and NiMo/alumina–titania sulfided catalysts on the hydrodesulfurization of 4,6-dimethyldibenzothiophene

► Pd was incorporated on the NiMo/AT in the oxidic phase. ► HRTEM results suggest that Pd and Ni are highly dispersed. ► Pd incorporation over the NiMo/AT sample increased the reaction rate by 30%. ► Pd promotes hydrogenation of intermediate products, increasing total conversion.

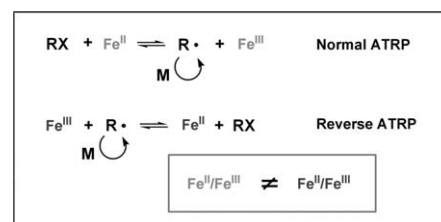


Helena Bergenudd, Mats Jonsson, Eva Malmström

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Investigation of iron complexes in ATRP: Indications of different iron species in normal and reverse ATRP

► Iron complexes as mediators in normal and reverse ATRP of MMA in DMF. ► Electrochemical and polymerization properties are investigated. ► Strong indications of different iron species in normal and reverse ATRP. ► The nature of the ligand is not crucial for the polymerization outcome.

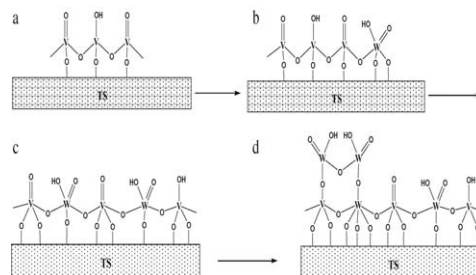


**Chuanzhi Sun, Lihui Dong, Wujiang Yu,
Lichen Liu, Hao Li, Fei Gao, Lin Dong, Yi Chen**

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Promotion effect of tungsten oxide on SCR of NO with NH₃ for the V₂O₅-WO₃/Ti_{0.5}Sn_{0.5}O₂ catalyst: Experiments combined with DFT calculations

► The V–O–W bond forms when the vanadium oxide and tungsten oxide are co-impregnated on support.
► Brønsted acid sites are the main active sites for “NO + NH₃ + O₂” reaction. ► The acid strength of Brønsted acid and the reducibility of vanadium oxide species are not responsible for the high SCR activities. ► The excessive WO₃ cover the vanadium oxide species leading to the decrease of the SCR activity. ► DFT calculations are employed to elucidate the effect of WO₃.

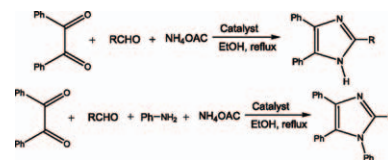


Abbas Teimouri, Alireza Najafi Chermahini

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An efficient and one-pot synthesis of 2,4,5-trisubstituted and 1,2,4,5-tetrasubstituted imidazoles catalyzed via solid acid nano-catalyst

► A one-pot, multicomponent methodology has been developed for the synthesis of 2,4,5-trisubstituted and 1,2,4,5-tetrasubstituted imidazoles catalyzed by clays, zeolite and nanocrystalline SZ as catalyst in high yields.
► Compared to previously reported methods, Moreover, the mild reaction conditions, easy work-up, clean reaction profiles, lower catalyst loading and cost efficiency render this approach as an interesting alternative to the existing methods. ► The catalysts can be recovered for the subsequent reactions and reused without any appreciable loss of their efficiency.

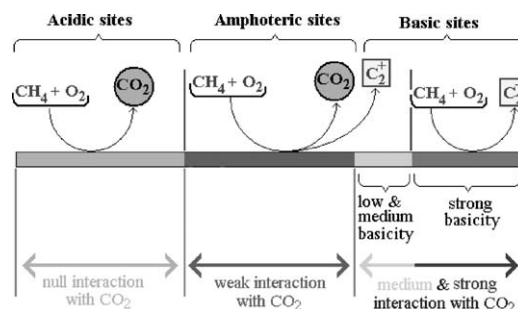


**Florica Papa, Patron Luminita, Petre Osiceanu,
Ruxandra Birjega, Miyazaki Akane, Ioan Balint**

Journal of Molecular Catalysis A: Chemical 346 (2011) 48

Acid–base properties of the active sites responsible for C₂⁺ and CO₂ formation over MO–Sm₂O₃ (M = Zn, Mg, Ca and Sr) mixed oxides in OCM reaction

► CH₄ conversion to C₂⁺ correlates with the number of basic sites of oxide catalysts. ► C₂⁺ is formed only when surface carbonate decomposes to generate free basic sites. ► The amount of available basic sites can be calculated from the amount of desorbed CO₂. ► CH₄ is unselectively oxidized to CO₂ on the acid sites of oxide catalysts. ► The activity of acid sites for CH₄ combustion is hindered by basic molecules (NH₃).

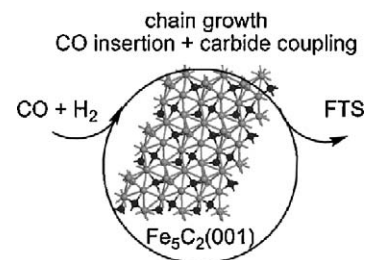


**Dong-Bo Cao, Yong-Wang Li, Jianguo Wang,
Haijun Jiao**

Journal of Molecular Catalysis A: Chemical 346 (2011) 57

Chain growth mechanism of Fischer–Tropsch synthesis on Fe₅C₂(0 0 1)

► The chain growth mechanisms of Fischer–Tropsch synthesis on Fe₅C₂(0 0 1) were reported. ► Chain initiation from CO insertion obeys insertion mechanism. ► Chain propagation from CCH coupling obeys carbide mechanism. ► Both mechanisms are operative and co-operative in Fischer–Tropsch synthesis.

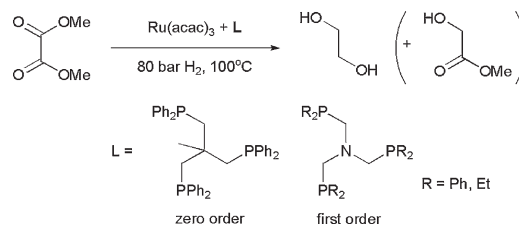


Martin J. Hanton, Sergey Tin, Brian J. Boardman, Philip Miller

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Ruthenium-catalysed hydrogenation of esters using tripodald phosphine ligands

► The synthesis of a new tripodald phosphine ligand, $N(\text{CH}_2\text{PEt}_2)_3$, NTriPhos^{Et}. ► Ru-catalysed ester hydrogenation using the tripodald ligands $N(\text{CH}_2\text{PR}_2)_3$ (R = Ph, Et). ► The effect of additives on Ru-TriPhos^{ph}-based ester hydrogenation. ► The kinetics of ester hydrogenation with Ru and tripodald phosphines. ► Contrasting ester hydrogenation with TriPhos^{ph} and N-TriPhos^{ph}.

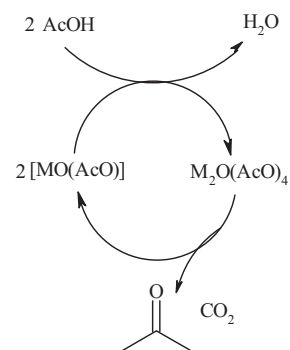


Yasuhiro Yamada, Masaki Segawa, Fumiya Sato, Takashi Kojima, Satoshi Sato

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Catalytic performance of rare earth oxides in ketonization of acetic acid

► La_2O_3 , CeO_2 , Pr_6O_{11} , and Nd_2O_3 are active in acetone formation from acetic acid. ► During the induction period, oxyacetate is formed in La_2O_3 , Pr_6O_{11} , and Nd_2O_3 . ► Bulk structure of CeO_2 was stable during the ketonization. ► The catalytic ketonization proceeds over the surface of the oxyacetate and CeO_2 . ► Catalytic cycle is composed of two steps: decomposition and regeneration of surface acetates.

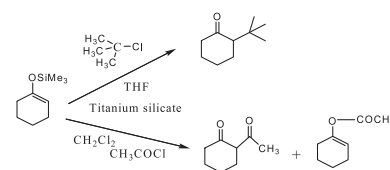


Manickam Sasidharan, Asim Bhaumik

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Titanium silicates as efficient catalyst for alkylation and acylation of silyl enol ethers under liquid-phase conditions

► Titanium silicates as efficient catalyst for alkylation and acylation of silyl enol ethers under liquid-phase conditions. ► Catalytic alkylation and acylation over TS-1, TS-2, Ti-β and Sn-MFI. ► Alkylation and acetylation of Silyl enol ethers. ► Lewis acidity of titanium silicates. ► -Alkylation/acylation of ketones over titanium silicates.

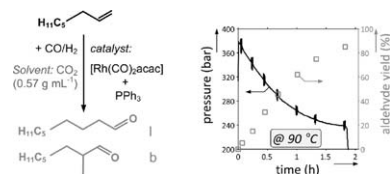


Ard C.J. Koeken, Leo J.P. van den Broeke, Nieck E. Benes, Jos T.F. Keurentjes

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Triphenylphosphine modified rhodium catalyst for hydroformylation in supercritical carbon dioxide

► Evaluation of kinetics of 1-octene hydroformylation in supercritical CO_2 . ► The reaction is first order in 1-octene and negative order in CO and phosphine. ► Increasing phosphine ligand amount improves selectivity and decreases activity. ► Rhodium with ttriphenylphosphine allows for high turnover frequencies in scCO_2 .

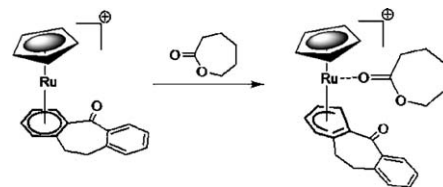


Andreia Valente, Philippe Zinck, André Mortreux, Marc Visseaux, Paulo J.G. Mendes, Tiago J.L. Silva, M. Helena Garcia

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Polymerization of ϵ -caprolactone using ruthenium(II) mixed metallocene catalysts and isopropyl alcohol: Living character and mechanistic study

► First Ru(II) mixed metallocene catalysts for living Activated Monomer mechanism. ► Innovative polymerization mechanism based on arene η^6 - η^4 slippage. ► DFT studies performed for the first time for a ROP via Activated Monomer mechanism. ► Recovery of the ruthenium catalytic complexes at the end of reaction. ► Growing of several polymer chains per metal: catalyst economy for green chemistry.



Kula Kamal Senapati, Chandan Borgohain, Kanak C. Sarma, Prodeep Phukan

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Photocatalytic degradation of methylene blue in water using CoFe_2O_4 - Cr_2O_3 - SiO_2 fluorescent magnetic nanocomposite

► A CoFe_2O_4 - Cr_2O_3 - SiO_2 fluorescent magnetic nanocomposite with high band gap energy. ► The nanocomposite acts as an efficient photocatalyst for degradation of methylene blue. ► Magnetic nanocomposite could be recovered using an external magnet and reused.

