



Index to Volume 29 (1999)

The subject index has been organized into topics for easy reference.

Subject Index 1999

Corrosion and prevention

- Corrosion rates and negative difference effects for Al and some Al alloys, 43
Atmospheric corrosion inhibitors for copper in the electronics industry, 117
Inhibiting effect of citric acid on the pitting corrosion of tin, 123
Effect of nitrite anions on the rate of iron dissolution in acid electrolytes, 201
Quantitative phase analysis of galvanized coatings by coulometric stripping, 209
Corrosion of cyanide copper deposits on zinc diecastings in acid solutions, 239
Appraisal of the polypyrrole/cataphoretic paint bilayer system as a protective coating for metals, 259
Characterization of the efficiency of antiscaling treatments of water. Part II: Physical processes, 339
Corrosion and corrosion inhibition of nickel in HClO₄ solutions using the EQCM technique, 347
Impedance measurements on lacquered tinplate: fitting with equivalent circuits, 383
Effect of chloride concentration range on the corrosion resistance of Cu–xNi alloys, 393
Electrochemical assessment of calcium carbonate deposition using a rotating disc electrode (RDE), 455
Electrochemical behaviour of Al, Al–Sn, Al–Zn and Al–Zn–Sn alloys in chloride solutions containing indium ions, 473
Study of sacrificial anode cathodic protection of buried tanks: Numerical modelling, 541
4-Aminoantipyrine as an inhibitor of mild steel corrosion in HCl solution, 593
Role of indium ions on the activation of aluminium, 601
Inhibition of phosphoric acid corrosion of zinc by organic onium compounds and their adsorption characteristics, 619
Behaviour of molybdate-passivated zinc coated steel exposed to corrosive chloride environments, 647
Time-dependent polarization behaviour of pipeline grade steel in low ionic strength environments, 703
Corrosion inhibition of steel by thiourea and cations under incomplete cathodic protection in a 3.5% NaCl solution and seawater, 911
Zn and Zn–Sn alloy coatings with and without chromate layers. Part I: Corrosion resistance and structural analysis, 927
Surface treatment for zinc corrosion protection by a new organic chelating reagent, 995
Influence of alloying elements and microstructure on aluminium sacrificial anode performance: case of Al–Zn, 1063
3,5-bis(*n*-Hydroxyphenyl)-4-amino-1,2,4-triazoles and 3,5-bis(*n*-aminophenyl)-4-amino-1,2,4-triazoles: a new class of corrosion inhibitors for mild steel in 1 M HCl medium, 1073
Corrosion behaviour of Zn–Co compositionally modulated multilayers electrodeposited from single and dual baths, 1133
Voltammetric study of Al–Zn–Mg alloys in chloride solutions, 1241
New passivating pastes for stainless steel without nitric acid, 1317
Investigation of copper corrosion inhibition by STM and EQCM techniques, 1339
Electrochemical pitting behaviour of type 321 stainless steel in sulfide-containing chloride solutions, 1377
Performance of zinc molybdenum phosphate in anticorrosive paints by accelerated and electrochemical tests, 1401
Capacitance of a solid sulfonated epoxy resin-coated electrode, 1457

Effluent and water treatment

- On the performance of Ti/SnO₂ and Ti/PbO₂ anodes in electrochemical degradation of 2-chlorophenol for wastewater treatment, 147
Electrochemical degradation of phenol in aqueous solution on bismuth doped lead dioxide: a comparison of the activities of various electrode formulations, 277
Electrochemical reduction of chromate ions from dilute artificial solutions in a GBC-reactor, 411
Photocatalytic degradation rate of oxalic acid on a semiconductive layer of *n*-TiO₂ particles in a batch mode plate photoreactor. Part II: Light intensity limit, 429
Electrochemical removal of nitrate ions in waste solutions after regeneration of ion exchange columns, 611
Electrochemical water disinfection. Part I: hypochlorite production from very dilute chloride solutions, 861
Electrochemical water disinfection. Part II: Hypochlorite production from potable water, chlorine consumption and the problem of calcareous deposits, 895
Electrolytic oxidation of trichloroethylene using a ceramic anode, 961
The use of a porous ceramic diaphragm for the removal of metallic impurities from chromium plating baths, 1129
Evaluation of porous cathodes for the electrochemical reduction of nitrates and nitrites in alkaline waste streams, 1305
Zirconium and Ebonex[®] as cathodes for sulphite ion oxidation in sulphuric acid, 1329
The effect of ultrasonic frequency and intensity upon electrode kinetic parameters for the Ag(S₂O₃)₂³⁻/Ag redox couple, 1359

Electrocatalysis and kinetics

- Electrooxidation of β-D(+)-glucose on bare and u.p.d modified platinum particles dispersed in polyaniline, 101
Electrochemical activation of the catalytic effect of cobalt in autoxidation of toluene in acetic acid, 253
Influence of surface chemical structure of active carbon on its electrochemical behaviour in the presence of silver, 481
Comparative study of nanocrystalline Ti₂RuFe and Ti₂RuFeO₂ electrocatalysts for hydrogen evolution in long-term chlorate electrolysis conditions, 551

- Anodically deposited manganese-molybdenum oxide anodes with high selectivity for evolving oxygen in electrolysis of seawater, 765
 High energy ball-milled Pt and Pt–Ru catalysts for polymer electrolyte fuel cells and their tolerance to CO, 951
 Evaluation of the surface roughness of microporous Ni–Zn–P electrodes by *in situ* methods, 979
 Oxidation of CO on hydrogen-loaded palladium, 1185
 Effect of preparation conditions on the structure and catalytic activity of carbon-supported platinum for the electrooxidation of methanol, 1197
 Electrocatalytic oxidation of methanol and formic acid on dispersed electrodes: Pt, Pt–Sn and Pt/M(upd) in poly(2-hydroxy-3-aminophenazine), 1255
 Spinel-type oxides $\text{LiMn}_{2-x}\text{M}_x\text{O}_4$ [M=Co, Fe, (CoFe)] as electrocatalyst for oxygen evolution/reduction in alkaline solution, 1351
 Role of surface defects in the electrocatalytic behaviour of copper in base, 1427
 Investigations of ruthenium pyrochlores as bifunctional oxygen electrodes, 1463

Electrochemical engineering

- Dynamic behaviour of electrochemical reactors for a step change in flow rate, 1147
 Instability of the two-phase flow in vertical interelectrode gaps, 1155

Electrochemical synthesis and production

- Indirect oxidation of *o*-chlorotoluene to *o*-chlorobenzaldehyde, 7
 Electrochemical reduction of 2-ethyl-9,10-anthraquinone (EAQ) and mediated formation of hydrogen peroxide in a two-phase medium. Part I: Electrochemical behaviour of EAQ on a vitreous carbon rotating disc electrode (RDE) in the two-phase medium, 11
 Electrochemical reduction of 2-ethyl-9,10-anthraquinone (EAQ) and mediated formation of hydrogen peroxide in a two-phase medium. Part II: Production of alkaline hydrogen peroxide by the intermediate electroreduction of EAQ in a flow-by porous electrode in two-phase liquid–liquid flow, 17
 Electrochemical synthesis of cupric oxide powder. Part II: Process conditions, 81
 Electrochemical reduction of ethylpicolinate: Competitive aspects of pyridine nucleus hydrogenation and ester reduction, 221
 Effect of trace additives on the efficiency of peroxydisulfate regeneration, 285
 Oxidation by electrogenerated mediator: influence of perfluorosulfonic separator on process performance, 371
 Factors governing the electrochemical synthesis of α -nickel (II) hydroxide, 449
 Synthesis of poly(*N,N,N*-trimethyl-*N*-2-methacryloxyethyl) ammonium chloride initiated by anodically generated Sn^{2+} cation, 489
 Electrochemical production of ferrate(VI) using sinusoidal alternating current superimposed on direct current. Pure iron electrode, 569
 Synthesis and characterization of a composite of polyaniline and carbon black, 759
 Cyclic potential sweep electrolysis for formation of poly(2-vinylpyridine) coatings, 1005
 Calculation of the current efficiency of the electrolytic sodium chlorate cells, 1237
 Behaviour of Nafion[®] 350 membrane in sodium sulfate electrochemical splitting: continuous process modelling and pilot scale tests, 1439

Electrochemical machining

- Tool design in electrochemical machining considering the effect of thermal-fluid properties, 321

Electrochromism

- Correlation between light absorption and electric charge in solid state electrochromic windows, 1103

Energy conversion, batteries and fuel cells

- Influence of silver on electrochemical and corrosion behaviours of Pb–Ca–Sn–Al grid alloys. Part I: Potentiodynamic and Potentiostatic studies, 1
 Ternary and quaternary mixed electrolytes for lithium cells, 35
 A 5 W liquid-feed solid-polymer-electrolyte direct methanol fuel cell stack with stainless steel, 129
 Structure investigations of SOFC anode cermets. Part I: Porosity investigations, 153
 Structure investigations of SOFC anode cermets. Part II: Electrochemical and mass transport properties, 165
 Modelling of phosphoric acid fuel cell cathode behaviour, 171
 Influence of silver on electrochemical and corrosion behaviours of Pb–Ca–Sn–Al grid alloys. Part II: A.c. impedance and scanning electron microscopy studies, 177
 Aromatic disulfides as additives to CuI in Mg–CuI seawater activated batteries, 271
 Test cells for the investigation of battery reactions at high internal pressures, 421
 Improvement in the diffusion characteristics of low Pt-loaded electrodes for PEFCs, 445
 Electrochemical impedance studies of a decade-aged magnesium/manganese dioxide primary cell, 463
 The feasibility of using a rechargeable MnO_2 cathode with a metal hydride anode, 511
 Gas evolution and power performance in direct methanol fuel cells, 661
 Effect of carbon-supported and unsupported Pt–Ru anodes on the performance of solid-polymer-electrolyte direct methanol fuel cells, 671
 Cycling performance and safety of rechargeable lithium cells with binary and ternary mixed solvent electrolytes, 789
 Plant substances as battery cathodes: Zinc–embelin organic secondary battery, 797
 Physical and electrochemical characteristics of aluminium-substituted nickel hydroxide, 855
 Influence of initial surface condition of lithium metal anodes on surface modification with HF, 869
 A water-activated cuprous bromide battery, 903
 Anodic dissolution of aluminium in organic electrolytes containing perfluoroalkylsulfonyl imides, 1053
 Evaluation of methods to increase the oxygen partial pressure in PEM fuel cells, 1095
 Effect of purification of 2-methyltetrahydrofuran/ethylene carbonate mixed solvent electrolytes on cyclability of lithium metal anodes for rechargeable cells, 1191

Enhancement of the electrooxidation of ethanol on a Pt-PEM electrode modified by tin. Part I: Half cell study, 1249
 Fabrication and evaluation of 1 Ah silver/metal hydride cells, 1285
 Characteristics of $\text{La}_{0.65}\text{Nd}_{0.2}\text{Pr}_{0.15}\text{Ni}_{3.55}\text{Co}_{0.75}\text{Mn}_{0.4}\text{Al}_{0.3}$ electrode for nickel metal hydride batteries, 1323
 Modelling of performance of PEM fuel cells with conventional and interdigitated flow fields, 1409
 Performance improvement of a MH/MnO₂ rechargeable battery, 1417
 Electrochemical study on orthorhombic LiMnO₂ as cathode in rechargeable lithium batteries, 1423
 An empirical equation for polymer electrolyte fuel cell (PEFC) behaviour, 1449

Instruments, methods and analysis

Construction and characterization of a rotating cylinder electrode for different technological applications, 741
 Cyclone flow cell for the investigation of gas-diffusion electrodes, 919
 Nonisothermal electrochemical cell for monitoring hydrogen or oxygen in high temperature water, 971

Mass transfer and hydrodynamics

Turbulent free convection in large electrochemical cells with a binary electrolyte, 27
 The anode effect as a fluid dynamic problem, 137
 Surface shear stress for a submerged jet impingement using electrochemical technique, 185
 Modelling of mass transfer within the PEM fuel cell active layer: limitations at the particle level, 1025
 Overall mass transfer in the swirling flow induced by a tangential inlet between coaxial cones, 1277
 Transient and turbulent mass transfer in rotating shallow electrochemical cells, 1291
 Mass transfer between a liquid and an array of discs in a cylindrical container. Part I: Pumped flow or rotation alone, 1383

Materials electrochemistry

Nanoparticles produced by borohydride reduction as precursors for metal hydride electrodes, 59
 Nickel ferrite as inert anodes in aluminium electrolysis: Part I Material fabrication and preliminary testing, 293
 Nickel ferrite as inert anodes in aluminium electrolysis: Part II Material performance and long-term testing, 301
 Electrodeposition of PbO₂ and Bi-PbO₂ on Ebonex, 313
 Electrochemical deposition of zinc-polystyrene composites in the presence of surfactants, 331
 Studies on metal hydride electrodes with different weights and binder contents, 361
 An adsorption strength model for the electrochemical codeposition of $\alpha\text{-Al}_2\text{O}_3$ particles and a Fe-P alloy, 437
 Graphite as anode material for the electrochemical production of polysulfide ions in white liquor, 521
 Large specific surface area nanocrystalline Ti-Ru-Fe cathode materials for sodium chlorate, 627
 Microstructural characterization and corrosion resistance of Ni-Zn-P alloys electrolessly deposited from a sulphate bath, 637
 Effect of crosslinking on the physicochemical properties of proton conducting PVDF-g-PSSA membranes, 677
 An investigation into the electrodeposition of Au-Cu-matrix particulate composites, 685
 Hydrogen evolution, incorporation and removal in electroless nickel composite coatings on aluminium, 837
 Changes in cold sealed aluminium oxide films during ageing, 845
 Porous platinum electrodes derived from the reduction of sputtered platinum dioxide films, 883
 Kinetics and mechanism of the preparation of Raney[®] copper, 1085

Metal and alloy deposition and dissolution

Influence of structural parameters on the properties of electrolytic Ni-Mn-S deposits, 51
 Electrodeposition of indium and zinc on aluminium, 245
 A statistical analysis of the electrodeposition of nickel in the presence of a magnetic field, 577
 Influence of thiourea on the nucleation of copper on polycrystalline platinum, 585
 Zinc barrel electroplating using low cyanide electrolytes, 729
 Electrochemical activation of the electroless deposition of Ni-P alloy and phase structure characterization of the deposit. Part I: Dual bath system, 747
 Electrodeposition of Co + Ni alloys on modified silicon substrates, 805
 Mass transfer and current efficiency for the electrodeposition of silver in fluorosilicic acid solution, 829
 Electrodeposition of zinc-nickel alloys from ammonia-containing baths, 1035
 Structure and thermal stability of zinc-nickel electrodeposits, 1045
 Zinc dissolution in ammonium chloride electrolytes, 1119
 An application of the Pollaczek-Khintchine theorem of queuing theory to the dynamics of anodic dissolution, 1125
 Ni-Zn-P alloy deposition from sulfate bath: inhibitory effect of zinc, 1171
 Copper nucleation on titanium for thin film applications, 1217
 Electrodeposition of Zn and In onto vitreous carbon, 1297
 A parallel plate flow cell for the investigation of the role of surfactants in the codeposition of polymer particles in nickel electroplating, 1393

Mineral and metallurgical electrochemistry

Kinetics and mechanism of MnO₂ dissolution in H₂SO₄ in the presence of pyrite, 191
 Influence of Zn²⁺ ions on copper electrowinning from sulfate electrolytes, 719
 Influence of Co²⁺ and Mn²⁺ ions on the kinetics of lead anodes for zinc electrowinning, 813
 Study of pyrite oxidation by cyclic voltammetric, impedance spectroscopic and potential step techniques, 987
 Anodic oxidation of sulphite ions on graphite anodes in alkaline solution, 1161
 Nickel electrowinning using a Pt catalysed hydrogen-diffusion anode. Part II: Batch tank with a sulphate bath, 1211

Zinc electrowinning from acidic sulphate solutions. Part III: Effects of quaternary ammonium bromides, 1229
Catalysis of oxygen evolution on IrO_x/Pb anodes in acidic sulfate electrolytes for zinc electrowinning, 1347
Nickel electrowinning using a Pt catalysed hydrogen-diffusion anode. Part I: Effect of chloride and sulfate ions and a magnetic field, 1367
Analysis of the presence of different contaminants on the copper electrodeposits morphology obtained from cement copper acid solutions, 1475

Molten salt electrochemistry

Electrochemical behaviour of indium ions in molten equimolar $\text{CaCl}_2 - \text{NaCl}$ mixture at 550 °C, 65
Electrochemical reduction of trivalent uranium ions in molten chlorides, 497
Electrochemical nucleation of uranium in molten chlorides, 505
Oxidation–reduction processes in halide and oxohalide niobium containing melts. Part I: Interaction of fluoride–chloride and oxofluoride–chloride Nb(V) melts with niobium oxides, 693
Effect of alumina concentration on the incipience of the anode effect in aluminium electrolysis, 779
Niobium plating processes in alkali chloride melts, 939
Effect of oxide ion donors on the corrosion and dechromization of stainless steels in KCl-NaCl-BaCl_2 melt, 1205

Photoelectrochemistry

A binary mixture of dyes (2-imidazolin-5-one and Rose Bengal) for photosensitization of $n\text{-ZnO}$ thin film electrodes in aqueous and acetonitrile media, 109
An integrated flow reactor-membrane filtration system for heterogeneous photocatalysis. Part I: Experiments and modelling of a batch-recirculated photoreactor, 533
Effect of $\text{Fe}(\text{CN})_6^{3-}$ | ITO interfacial cathodic current on the efficiency of the photoelectrochemical $n\text{-PbO}|\text{Fe}(\text{CN})_6^{3-/4-}$ | ITO cell, 1015
An integrated flow reactor-membrane filtration system for heterogeneous photocatalysis. Part II: Experiments on the ultrafiltration unit and combined operation, 1111
Effect of nonaqueous anodic oxidation on the intensity of photoluminescence of porous silicon, 1177

Solid state electrochemistry

Electrochemical evaluation of molybdenum nitride electrodes in H_2SO_4 electrolyte, 75
Planar oxygen sensor Part I: Effect of crazing of a zirconia thick film on an alumina substrate, 93
Characterization of porous aluminium oxide films from a.c. impedance measurements, 229
Stabilized bismuth oxide–noble metal mixed conducting composites as high temperature oxygen separation membranes, 355
Reaction of CO/CO_2 gas mixtures on Ni–YSZ cermet electrodes, 561
A solid-state electrochromic device based on complementary polypyrrole/polythiophene derivatives and an elastomeric electrolyte, 753
Electrodeposition of doped solid films of phosphomolybdates, 1471

Thermodynamics and physical properties

Sulfate solubility algorithms for $\text{CaSO}_4\text{-NaCl-H}_2\text{O}$ and $\text{Na}_2\text{SO}_4\text{-NaCl-H}_2\text{O}$ in chlor alkali brine at 25, 65, 75 and 85 °C, 525
High temperature electrochemical heat pump using water gas shift reaction. Part I: Theoretical considerations, 1079
An electric model of a vapour anode, multitube alkali–metal thermal-to-electric converter, 1263

Miscellaneous

Voltammetric and coulometric techniques to estimate the electrochemical reaction rate during ohmic sterilization, 821