

## **Diamond Electrodes and the Environment**

The Use of Boron-Doped Diamond Electrodes for the Electrochemical Oxidation of Phenol W.E. O'Grady, P.M. Natishan, B.R. Stoner and P.L. Hagans	1
Loop-Controlled Chlorine Production for Disinfection of Pool-Water Using Boron-Doped Diamond Electrodes W. Haenni, J. Gobet, A. Perret, L. Pupunat, Ph. Rychen, Ch. Comninellis and B. Correa	16
Potentiodynamic Behavior of the Boron-Doped Diamond Electrodes in Na <sub>2</sub> SO <sub>4</sub> with pH 1 to 12 M.C. Ribeiro, E.F. Ribeiro, P.T.A. Sumodjo, L.L. Silva and E.J. Corat	24
The Use of Diamond Electrodes for the Analytical Determination of Pentachlorophenol in Waters L.A. Avaca, L. Codognoto and S.A.S. Machado	34

## **Structure –Reactivity Studies of Diamond Electrodes**

Effect of Crystal Structure on the Electrochemical Behavior of Diamond Electrodes: Characteristics of Individual Crystal Faces Yu. V. Pleskov, Yu. E. Evstefeeva, M.D. Krotova, V.A. Laptev, Yu. N. Palyanov and Yu. M. Borzdov	43
The Influence of Surface Termination on the Electrochemical Properties of Boron-Doped Diamond M. Alexander, M.N. Latta, G. Pastor-Moreno and D. J. Riley	54
In Situ Infrared Measurements of a Diamond Electrochemical Electrodes During Polarization H. B. Martin and P.W. Morrison, Jr.	66
Electrochemical Interactions of Group IB Metals at Chemical Vapour Deposited Boron-Doped Diamond Surfaces J. S. Foord, A. Chatterjee, K.B. Holt, R. G. Compton and F. Marken	74
Electrodes in Molten Salts: Theory, Experiment, Application I.A. Novoselova, S.V. Volkov and T.A. Nachalnaya	84

Electrochemical Characterization of Nitrogen Incorporated Tetrahedral Carbon Films Grown by a Filtered Cathodic Vacuum Arc	93
N.C. Lee, Q. Shi, W. Cai, D.A. Scherson and B. Miller	
Preparation of Boron-Doped Diamond Thin Films Using $\text{BF}_3$ and the Electrochemical Behavior of the Semi-Conducting Diamond Electrodes	103
F. Okino, Y. Kawaguchi, S. Kawasaki, H. Touhara, M. Nishitani-Gamo and T. Ando	
Charge Sensitive Deep Level Transient Spectroscopy of Mono- and Polycrystalline Diamond	108
V.I. Polyakov, A.J. Rukovishnikov, N.M. Rossukanyi, V.P. Varnin, I.G. Teremetskaya, V.A. Laptev and V. Ralchenko	
Polarization Dependence of SFG Spectra of H/C(100) Surface	113
A. Wada, H. Takaba, K. Kusafuka, T. Ando, M.N. Gamo, Y. Sato and C. Hirose	

### **Modified Diamond Electrode Surfaces**

Electroanalytical Applications of Bare and Modified Diamond Electrodes	127
A. Fujishima, T.N. Rao and E.V. Sarada	
Electrochemical Properties of Sulfur-Doped Diamond	139
S.C. Eaton, A.B. Anderson, J.C. Angus, Y.E. Evstefeeva and Y.V. Pleskov	
Deposition of Nanoparticles of Iridium Dioxide on a Synthetic Boron-Doped Diamond Surface	147
I. Duo, Ch. Comninellis, W. Haenni and A. Perret	
Electrocatalytic Diamond Thin Film Electrodes with Incorporated Pt	157
J. Wang, G.M. Swain, T. Tachibana and K. Kobashi	
Electrochemical Oxidation of Alkylphenols at ECR-Sputtered Carbon Film Electrodes with Flat Sub-Nanometer Surface	168
T. You, O. Niwa, M. Tomita, T. Ichino and S. Hirono	

## **Electrosynthesis, Plasma Diagnostics and Nanocrystalline Diamond**

- Electrochemical Reduction of Formaldehyde to Ethylene  
Glycol at Modified Graphite Electrodes 185  
F. Regisser, G.M. Swain and D. Belanger
- Diagnostics and Modeling of Moderate Pressure Microwave  
 $H_2/CH_4$  Plasmas Obtained Under Pulsed Mode 192  
G. Lombardi, X. Duten, K. Hassouni and A. Gicquel

## **Growth Mechanisms, Doping and Electronic Properties**

- The Effect of  $H_2S$  on Diamond Homoepitaxy 200  
M. Nishitani-Gamo, C. Xiao, Y. Zhang and T. Ando
- Hydrogen Trapping and Stability at the Polycrystalline  
CVD Diamond Surface and in the Subsurface Layers 211  
D. Ballutaud, F. Jomard, J. Vigneron, B. Canava, C. Mer  
and P. Bergonzo
- Dopants in Diamond Nanoparticles and Bulk Density 221  
Functional Study of Substitutional B, N, P, Sb, Pn, Nn, and  
Interstitial H  
T.V. Albu, A.B. Anderson and J.C. Angus

## **Applications**

- CVD Diamond for High Power and High Temperature  
Electronics 234  
S. L. Heidger, N.J. Baraty and J.A. Weimer
- Some Practical Examples of Diamond Microelectromechanical  
Structures (DMEMS) 240  
J.L. Davidson, W.P. Kang, T. Fisher, K. Holmes, A. Wisitsora-At  
and M. Howell
- Microwave Plasma Deposition of CVD Diamond Films for  
MEMS Applications 252  
A.A. Shaik, H.A. Naseem, W.D. Brown and S.S. Ang
- High Pressure –High Temperature Device for Making  
Diamond Materials 264  
O.A. Voronov, G.S. Tompa and B.H. Kear

Chemical Vapor Infiltration of TiN in cBN Matrix for Composite cBN-TiN Coatings: Advanced Materials And Processes W.D. Brown, A.P. Malshe, S.N. Yedave and W.C. Russell	272
Highly Efficient Field Emitter Using Carbon Nanotubes Grown by Microwave Plasma-Enhanced CVD Y.M. Wong, W.P Kang, J.L. Davidson, A. Wisitsora-At and K.L. Soh	281
Subject Index	289