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Key articles related to the surface chemistry of diamond crystals are presented in this 1993 update of an earlier compilation. The listings are arranged chronologically. The review extends up to mid-1993. This review will be useful to workers in the field of diamond film-growth chemistry even though the extensive film-growth literature has no been reviewed.

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SELECTED BIBLIOGRAPHY II - DIAMOND SURFACE CHEMISTRY

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The search methods employed are listed below:

1. A computerized search of Chemical Abstracts was made from the period 1989 to mid-1993 using the keywords diamond (diamonds) and surface (surfaces).

2. Earlier papers were obtained from Bibliography I by V. Smentkowski and J.T. Yates, Jr., AFOSR Technical Report No. F49620-86-C-0125.

3. Additional papers were obtained by hand searching the references in Bibliography I.

4. Additional hand searching was done in references in the papers found in 1 above.

5. Key authors in the field of the surface science of diamond were identified and an additional search was performed by cross-searching the keyword diamond (diamonds) with the key authors.

More than 850 articles are listed.

(Upon request, an ASCII file of this bibliography can be provided)

Selected Bibliography II - Diamond Surface Chemistry

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University of Pittsburgh
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5. Key authors in the field of the surface science of diamond were identified and an additional search was performed by cross-searching the keyword diamond (diamonds) with the key authors.

More than 850 articles are listed.

I. DIAMOND SURFACE CHEMISTRY & SURFACE STRUCTURE

AUTHOR: Haneman D.

TITLE: "Surface Structures and Properties of Diamond - Structure Semiconductors"

JNL: Phys. Rev.

REF: 121 (1961) 1093

AUTHOR: Marsh J.B. and Farnsworth H.E.

TITLE: "Low-Energy Electron Diffraction Studies of (100) and (111) Surfaces of Semiconducting Diamond"

JNL: Surface Science

REF: 1 (1964) 3-21

AUTHOR: Evans T. and James P.F.

TITLE: "A Study of the Transformation of Diamond to Graphite"

JNL: Proc. R. Soc. Lond. A

REF: 277 (1964) 260

AUTHOR: Pugh D.

TITLE: "Surface States on the (111) Surface of Diamond"

JNL: Physical Review Letters

REF: 12 (1964) 390

AUTHOR: Lander J.J. and Morrison J.

TITLE: "Low Energy Electron Diffraction Study of the (111) Diamond Surface"

JNL: Surface Science

REF: 4 (1966) 241-246

AUTHOR: Sappok R. and Boehm H.P.

TITLE: "Chemistry of Diamond Surfaces. I. Heats of Wetting, and Electron Spin Resonance, and Infrared Spectra of the Surface Hydrides, Halides, and Oxides"

JNL: Carbon

REF: 6 (1968) 283

AUTHOR: Sappok R. and Boehm H.P.

TITLE: "Chemistry of Diamond Surfaces. II. Formation, Properties, and Structure of Surface Oxides"

JNL: Carbon

REF: 6 (1968) 573

AUTHOR: Thomas J.M., Evans E.L., Barbber M. and Swift P.

TITLE: "Determination of the Occupancy of Valence Bands in Graphite, Diamond and Less-ordered Carbons by X-Ray Photo-electron Spectroscopy"

JNL: Trans. Faraday Soc.

REF: 67 (1971) 1875

AUTHOR: Runciman W.A. and Carter T.

TITLE: "High Resolution Infra-red Spectra of Diamond"

JNL: Solid State Commun.

REF: 9 (1971) 315

AUTHOR: Bansal R.C., Vastola F.J. and Walker, Jr. P.L.

TITLE: "Kinetics of Chemisorption of Oxygen on Diamond"

JNL: Carbon

REF: 10 (1972) 443

AUTHOR: Theeten J.-B. and Dobrzynski L.

TITLE: "Simple Calculation of the Mean-Square Displacements of Bulk and Surface Atoms of Diamond-Structure Crystals"

JNL: Physical Review B

REF: 5 (1972) 1529

AUTHOR: Matsumoto S., Sato Y., Setaka N. and Goto M.

TITLE: "Mass Spectral Analysis of Thermally Desorbed Gases from Diamond Surfaces"

JNL: Chemistry Letters

REF: (1973) 1247-1250

AUTHOR: McFeely F.R., Kowalczyk S.P., Ley L., Cavell R.G., Pollak R.A. and Shirley D.A.

TITLE: "X-Ray Photoemission Studies of Diamond, Graphite, and Glassy Carbon Valence Bands"

JNL: Physical Review B

REF: 9 (1974) 5268

AUTHOR: Egerton R.F. and Whelan M.J.

TITLE: "The Electron Energy Loss Spectrum and Band Structure of Diamond"

JNL: Philos. Mag.

REF: 30 (1974) 739

AUTHOR: Collins A.T.

TITLE: "Visible Luminescence from Diamond"

JNL: Industrial Diamond Review

REF: 34 (1974) 131

AUTHOR: Muda Y. and Hanawa T.

TITLE: "Study of Adsorption by the Extended Huckel Theory. Carbon Monoxide on Diamond (111) Surface"

JNL: Jpn. J. Appl. Phys., part 1

REF: 13 (6) (1974) 930

AUTHOR: Brookes C.A.

TITLE: "The Friction of Diamond at Elevated Temperatures and Its Interfacial Reactions with Steel"

JNL: Industrial Diamond Review

REF: 34 (1974) 21

AUTHOR: Cadman P., Scott J.D. and Thomas J.M.

TITLE: "Identification of Functional Groups on the Surface of a Fluorinated Diamond Crystal by Photoelectron Spectroscopy"

JNL: Journal Chem. Soc. Chem. Comm.

REF: (1975) 654

AUTHOR: Patel A. R. and Patel T. C.

TITLE: "The Natural Etching of Sub-Boundary Dislocations on (111) Diamond"

JNL: J. Appl. Crystallogr.

REF: 8 (pt2) (1975) 327

AUTHOR: Tabor D.

TITLE: "Some Physical Aspects of the Diamond Surface"

JNL: Diamond Res.

REF: (1975) 9

AUTHOR: Ciraci S., Batra I.P. and Tiller W.A.

TITLE: "Electronic Structure of the (111) Surface of Semiconductors"

JNL: Physical Review B

REF: 12 (1975) 5811

AUTHOR: Lurie P.G. and Wilson J.M.

TITLE: "A Study of the Diamond Surface Using Electron Spectroscopy"

JNL: Diamond Res.

REF: (1976) 26

AUTHOR: Evans S. and Thomas J.M.

TITLE: "The Chemical Nature of Ion-bombarded Carbon: A Photoelectron Spectroscopic Study of 'Cleaned' Surfaces of Diamond and Graphite"

JNL: Proc. R. Soc. Lond. A

REF: 353 (1977) 103-120

AUTHOR: Ciraci S. and Batra I.P.

TITLE: "Study of the Diamond (100) Surface Using the Self Consistent Field Extended Tight Binding Method"

JNL: Phys Rev. B

REF: 15(6) (1977) 3254

AUTHOR: Lurie P.G. and Wilson J.M.

TITLE: "The Diamond Surface I. The Structure of the Clean Surface and the Interaction with Gases and Metals"

JNL: Surface Science

REF: 65 (1977) 453

AUTHOR: Lurie P.G. and Wilson J.M.

TITLE: "The Diamond Surface II. Secondary Electron Emission"

JNL: Surface Science

REF: 65 (1977) 476

AUTHOR: Lurie P.G. and Wilson J.M.

TITLE: "The Diamond Surface III. Differential Cross Sections for Inelastic Scattering"

JNL: Surface Science

REF: 65 (1977) 499

AUTHOR: Cadman P., Scott J.D. and Thomas J.M.

TITLE: "The Fluorination of the Surfaces of Elemental Carbon I. - X-ray Photoelectron Spectroscopic Studies of Fluorinated Graphite"

JNL: Carbon

REF: 15 (1977) 75

AUTHOR: Matsumoto S., Kanda H., Sato Y. and Setaka N.

TITLE: "Thermal Desorption Spectra of the Oxidized Surfaces of Diamond Powders"

JNL: Carbon

REF: 15 (1977) 299

AUTHOR: Evans S. and Thomas J.M.

TITLE: "Surface Properties of Diamond - Some Recent Developments"

JNL: Diamond Res.

REF: (1978) 31

AUTHOR: Evans S.

TITLE: "Depth Profiles of Ion-induced Structural Changes in Diamond from X-ray Photoelectron Spectroscopy"

JNL: Proc. R. Soc. London A

REF: 360 (1978) 427

AUTHOR: Ihm J., Louie S.G. and Cohen M.L.

TITLE: "Self-consistent Pseudopotential Calculations for Ge and Diamond (111) Surfaces"

JNL: Phys. Rev. B

REF: 17 (2) (1978) 769

AUTHOR: Snyder L.C. and Wasserman Z.

TITLE: "Molecular SCF Calculations to Model (111) Surface States and Relaxation of Diamond"

JNL: Surface Science

REF: 71 (1978) 407-413

AUTHOR: Appelbaum J.A. and Hamann D.R.

TITLE: "Theory of Reconstruction Induced Subsurface Strain -Application to Si(100)"

JNL: Surface Science

REF: 74 (1978) 21-33

AUTHOR: Cadman P., Scott J.D. and Thomas J.M.

TITLE: "The Fluorination of the Surface of Elemental Carbon, II. Deposition and Stability of Fluorine Containing Species: X-ray Photoelectron Spectroscopic Studies of Flurorinated Graphite"

JNL: Surface and Interface Analysis

REF: 1(4) (1979) 115

AUTHOR: Matsumoto S. and Setaka N.

TITLE: "Thermal Desorption Spectra of Hydrogenated and Water Treated Diamond Powders"

JNL: Carbon

REF: 17 (1979) 485

AUTHOR: Verwoerd W.W. and Kok F.J.

TITLE: "Relaxation and Reconstruction of Si and Diamond (111) Surfaces using X4H9 Clusters"

JNL: Surface Science

REF: 80 (1979) 89

AUTHOR: Agrawal B.K.

TITLE: "Electronic Structure of Clean and Metal Chemisorbed Diamond (111) Surfaces"

JNL: Solid State Commun.

REF: 35 (1980) 971

AUTHOR: Cohen M.L.

TITLE: "Comment on "Quantum Photo Yield of Diamond (111) - a Stable Negative - Affinity Emitter"

JNL: Phys. Rev. B

REF: 22 (1980) 1095

AUTHOR: Himpsel F.J., Eastman D.E. and van der Veen J.F.

TITLE: "Summary Abstract: Electronic Surface Properties and Schottky Barriers for Diamond (111)"

JNL: J. Vac. Sci. Technol.

REF: 17 (1980) 1085

AUTHOR: Pate B.B., Spicer W.E., Ohia T. and Lindau I.

TITLE: "Electronic Structure of the Diamond (111)-(1x1) Surface: Valence Band Structure, Band Bending and Band Gap States"

JNL: J. Vac. Sci. Technol

REF: 17(5) (1980) 1087

AUTHOR: Pate B.B., Jupiter P.J., Lindau I. and Spicer W.E.

TITLE: "The Electronic and Atomic Structure of Diamond Surface and Effects of Hydrogen Termination"

JNL: Report, ARO-15878.3-P; Order No. AD-A109142, 21pp Avail. NTIS, From Gov. Rep. Announce. Index (US) 1982, 82(9), 1833

REF: (1981)

AUTHOR: Gaigher E. and Verwoerd W.S.

TITLE: "Comparative Study of Reconstructed Silicon and Diamond (111) Surfaces Modeled by Small Clusters"

JNL: Surface Science

REF: 103 (1981) 338

AUTHOR: Verwoerd W.S.

TITLE: "A Study of the Dimer Bond on the Reconstructed (100) Surfaces of Diamond and Silicon"

JNL: Surface Science

REF: 103 (1981) 404-415

AUTHOR: Himpsel F.J., Eastman D.E., Heimann P. and van der Veen J.F.

TITLE: "Surface States on Reconstructed Diamond (111)"

JNL: Phys. Rev. B

REF: 24 (1981) 7270

AUTHOR: Matsumoto S., Sato Y. and Setaka N.

TITLE: "The Effect of Preceding Heat Treatment on Hydrogen Chemisorption of Diamond Powders"

JNL: Carbon

REF: 19 (1981) 232

AUTHOR: Moravec T.J. and Orent T.W.

TITLE: "Electron Spectroscopy of Ion Beam and Hydrocarbon Plasma Generated Diamondlike Carbon Beams"

JNL: J. Vac. Sci. Technol.

REF: 18 (1981) 226

AUTHOR: Pate B.B., Stefan P.M., Binns C., Jupiter P.J., Shek M.L., Lindau I. and Spicer W.E.

TITLE: "Formation of Surface States on the (111) Surface of Diamond"

JNL: J. Vac. Sci. Technol

REF: 19 (3) (1981) 349

AUTHOR: Pepper S.V.

TITLE: "Electron Spectroscopy of the Diamond Surface"

JNL: Appl. Phys. Lett.

REF: 38 (1981) 344

AUTHOR: Spitsyn B.V., Bouilov L.L. and Derjaguin B.V.

TITLE: "Vapor Growth of Diamond on Diamond and Other Surfaces"

JNL: J. Crystal Growth

REF: 52 (1981) 219

AUTHOR: Vidali G. and Cole M.W.

TITLE: "Long Range Interaction between a He Atom and a Semiconductor Surface"

JNL: Surface Science

REF: 107 (1981) L374-L378

AUTHOR: Verwoerd W.S.

TITLE: "The Adsorption of Hydrogen on the (100) Surfaces of Silicon and Diamond"

JNL: Surface Science

REF: 108 (1) (1981) 153

AUTHOR: Pandey K.C.

TITLE: "New Dimerized Chain Model for the Reconstruction of the Diamond (111) - (2x1) Surface"

JNL: Phys. Rev. B

REF: 25 (1982) 4338

AUTHOR: Armon H. and Sellschop J.P.F.

TITLE: "Angular Dependence of Electron-Energy-Loss Spectroscopy: Application to Diamond"

JNL: Physical Review B

REF: 26 (1982) 2389

AUTHOR: Pandey K.C.

TITLE: "Reconstruction of Semiconductor Surfaces: Buckling, Ionicity, and π-Bonded Chains"

JNL: Phys. Rev. Lett

REF: 49 (1982) 223

AUTHOR: Pepper S.V.

TITLE: "Transformation of the Diamond (110) Surface"

JNL: J. Vac. Sci. Technol

REF: 20 (2) (1982) 213

AUTHOR: Pate B.B., Hecht M.H., Binns C., Lindau I. and Spicer W.E.

TITLE: "Photoemission and Photon Stimulated Ion Desorption Studies of Diamond (111): Hydrogen"

JNL: J. Vac. Sci. Technol

REF: 21 (2) (1982) 364

AUTHOR: Pepper S.V.

TITLE: "Diamond (111) Studied by EELS in the Characteristic Loss Region"

JNL: Surface Science

REF: 123 (1) (1982) 47

AUTHOR: Waclawski B.J., Pierce D.T., Swanson N. and Celotta R.J.

TITLE: "Direct Verification of Hydrogen Termination of the Semiconduction Diamond (111) Surface"

JNL: J. Vac. Sci. Technol

REF: 21 (2) (1982) 368

AUTHOR: Gordeev S.K. and Smirnov E.P.

TITLE: "Study of the Reaction of Titanium Tetrachloride with Diamond Preparations"

JNL: Zh. Obshch. Khim.

REF: 52 (1982) 1464

AUTHOR: Gordeev S.K., Smirvov E.P, Kol'sov S.I. and Aleskovskii V.B.

TITLE: "Reaction of Functional Groups in Substitution Reactions on a Diamond Surface"

JNL: Dokl. Akad. Nauk SSSR

REF: 262 (1982) 127

AUTHOR: Pate B.B. et. al

TITLE: "The Diamond (111) Surface: A Dilemma Resolved"

JNL: Physica 117 B & 118 B (Amsterdam)

REF: (1983) 783

AUTHOR: Barone V. and Del Re G.

TITLE: "Hybridization and Surface Relaxation in Diamond -like Crystals"

JNL: THEOCHEM.

REF: 11 (1983) 173

AUTHOR: Vanderbilt D. and Louie S.G.

TITLE: "A First Principles LCAO Study of Ideal and Reconstructed Diamond (111) (1x1) and (2x1) Surfaces"

JNL: J. Vac. Sci. Technol

REF: B1(3) (1983) 723

AUTHOR: Woods G.S. and Collins A.T.

TITLE: "Infrared Absorption Spectra of Hydrogen Complexes in Type I Diamond"

JNL: J. Phys. Chem. Solids

REF: 44 (1983) 471

AUTHOR: Vidali G., Cole M.W., Weinberg W.H. and Steele W.A.

TITLE: "Helium as a Probe of the (111) Surface of Diamond"

JNL: Phys. Rev. Lett

REF: 51(2) (1983) 118

AUTHOR: Vidali G. and Frankl D.R.

TITLE: "He-Diamond Interaction Probed by Atom Beam Scattering"

JNL: Phys. Rev. B

REF: 27(4) (1983) 2480

AUTHOR: Derry T.E., Madiba C.C.P. and Sellschop J.P.F.

TITLE: "Oxygen and Hydrogen on the Surface of Diamond"

JNL: Nucl. Instrum. Methods Phys. Res.

REF: 218 (1983) 559-562

AUTHOR: Fink J., Müller-Heinzerling T. and Pflüger J.

TITLE: "Structure and Bonding of Hydrocarbon Plasma Generated Carbon Films: An Electron Energy Loss Study"

JNL: Solid State Communications

REF: 47 (1983) 687-691

AUTHOR: Whetten T. A., Armstead A. A., Grzybowski T. A. and Ruoff A. L.

TITLE: "Etching of Diamond with Argon and Oxygen Beams"

JNL: J. Vac. Sci. Technol. A

REF: 2(2) (1984) 477

AUTHOR: Chadi D.J.

TITLE: "Multiple Bonding on C(111)-2x1 Surfaces: Surface Structural Determination from Energy Minimization"

JNL: J. Vac. Sci. Technol. A

REF: 2 (1984) 948

AUTHOR: Davis G., Collins A.T. and Spear P.

TITLE: "Sharp Infra-red Absorption Lines in Diamond"

JNL: Solid State Commun.

REF: 49 (1984) 433

AUTHOR: Pate B.B., Oshima M., Silberman J.A., Ross G., Lindau I. and Spicer W.E.

TITLE: "Carbon 1s Studies of Diamond (111): Surface Shifts, Hydrogenation, and Electron Escape Lengths"

JNL: J. Vac. Sci. Technol

REF: A, 2 (1984) 957

AUTHOR: Pate B.B.

TITLE: "Diamond Surface: Atomic and Electronic Structure"

JNL: Report, SSRL-84/04; Order No. DE84013518, 241 pp., Avail. NTIS
From: Energy Res. Abstr.

REF: 9(18) (1984) Abstr. No. 36471

AUTHOR: Yang W.S. and Jona F.

TITLE: "Missing Spots in Low-Energy Electron Diffraction Patterns"

JNL: Physical Review B

REF: 29 (1984) 899

AUTHOR: Pate B.B.

TITLE: "Diamond Surface: Atomic and Electronic Structure"

JNL: From: Diss. Abstr. Int. B
(Avail. Univ. Microfilms Int., 280 pp., Order No. DA8412877)

REF: 45(3) (1984) 919

AUTHOR: Vanderbilt D. and Louis S.G.

TITLE: "Total Energy Minimization for Diamond (111) Surfaces: Support for an Undimerized π bonded Chain Reconstruction"

JNL: Phys. Rev. B

REF: 29(12) (1984) 7099

AUTHOR: Vanderbilt D. and Louie S.G.

TITLE: "Total Energies of Diamond (111) Surface Reconstructions by a Linear Combination of Atomic Orbitals Method"

JNL: Phys. Rev. B

REF: 30(10) (1984) 6118

AUTHOR: Dayan M. and Pepper S.V.

TITLE: "Study of the Auger Line Shape of Polyethylene and Diamond"

JNL: Surf. Sci.

REF: 138 (1984) 549

AUTHOR: Dovesi R., Pisani C., Roetti C., Ricart J.M. and Illas F.

TITLE: "Periodic MINDO/3 Study of the Unreconstructed (111) Surface of Diamond and of Hydrogen Chemisorption Thereon"

JNL: Surface Science

REF: 148 (1984) 225-236

AUTHOR: Barone V., Lelj F., Russo N. and Abbate G.

TITLE: "Surface Relaxation and Reconstruction in Diamond-like Crystals"

JNL: Solid State Communications

REF: 49 (1984) 925-928

AUTHOR: Koma A. and Miki K.

TITLE: "Core Electron Excitation Spectra of Diamond, Graphite, and Glassy Carbon"

JNL: Appl. Phys. A

REF: 34 (1984) 35-39

AUTHOR: Barone V., Lelj F., Russo N., Toscano M., Illas F. and Rubio J.

TITLE: "A Theoretical Study of Relaxation and Reconstruction of the (111) Diamond Surface"

JNL: Surface Science

REF: 162 (1985) 169

AUTHOR: Lowther J.E.

TITLE: "Hydrogen Adsorption on the (001) Diamond Surface"

JNL: Solid State Commun.

REF: 56(2) (1985) 243

AUTHOR: Efremow N.N., Geis M.W., Flanders D. C., Lincoln G.A. and Economou N.P.

TITLE: "Ion Beam Assisted Etching of Diamond"

JNL: J. Vac. Sci. Technol

REF: B3(1) (1985) 416

AUTHOR: Pate B.B., Lindau I. and Spicer W.E.

TITLE: "Very Strong Lattice Coupling in Diamond at Photon Energies up to 1.5 eV above the Bandgap"

JNL: Proc. Int. Conf. Phys. Semicond., 17th

REF: (1985) 1181

AUTHOR: Vanderbilt D. and Louie S.G.

TITLE: "Specific Applications. Energy Minimization Calculations for Diamond (111) Surface Reconstructions"

JNL: Springer Ser. Surf. Sci.

REF: (1985) 29

AUTHOR: Zhurakovskii E.A. and Zaulichnyi Ya. V.

TITLE: "Quantum Yeild of the X-Ray Photoelectric Effect in the Region of the K Absorption Edge of Carbon and K Emission Spectra of Carbon in Graphite, Lonsdaleite, and Diamond"

JNL: Sov. Phys. -Solid State

REF: 27 (1985) 2081

AUTHOR: Morar J.F., Himpsel F.J., Hollinger G., Hughes G. and Jordan J.L.

TITLE: "Observation of a C-1s Core Excitation in Diamond"

JNL: Physical Review Letters

REF: 54 (1985) 1960

AUTHOR: Gordeev S.K. and Zhukova N.A.

TITLE: "Basic Functional Groups of the Diamond Surface"

JNL: Kolloid. Z.

REF: 50 (5) (1986) 988

AUTHOR: Rothschild M., Arnone C. and Ehrlich D.J.

TITLE: "Excimer-laser Etching of Diamond and Hard Carbon Films by Direct Writing and Optical Projection"

JNL: J. Vac. Sci. Technol. B

REF: 4 (1986) 310

AUTHOR: Pate B.B.

TITLE: "The Diamond Surface: Atomic and Electronic Structure"

JNL: Surface Science

REF: 165 (1986) 83

AUTHOR: Morar J.F., Himpsel F.J., et. al

TITLE: "Carbon 1s Excitation Studies of Diamond (111). I. Surface Core Levels"

JNL: Phys. Rev. B

REF: 33(2) (1986) 1340

AUTHOR: Morar J.F., Himpsel F.J., et. al

TITLE: "Carbon 1s Excitation Studies of Diamond (111). II. Unoccupied Surface States"

JNL: Phys. Rev. B

REF: 33(2) (1986) 1346

AUTHOR: Barone V., Lelj F., Russo N., Toscano M., Illas F. and Rubio J.

TITLE: "Nonempirical Cluster-model Study of the Chemisorption of Atomic Hydrogen on the (111) Surface of Diamondlike Crystals"

JNL: Phys. Rev. B.

REF: 34 (1986) 7203

AUTHOR: Derry T.E., Smit L. and van der Veen J.F.

TITLE: "Ion Scattering Determination of the Atomic Arrangement at Polished Diamond (111) Surfaces Before and After Reconstruction"

JNL: Surface Science

REF: 167 (1986) 502

AUTHOR: Mizokawa Y., Miyasato T., Nakamura S., Geib K.M. and Wilmsen C.W.

TITLE: "Comparison of the C KLL First-Derivative Auger Spectra from XPS and AES Using Diamond, Graphite, SiC and Diamond-Like-Carbon Films"

JNL: Surface Science

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