TABLE OF CONTENTS

GAS-PHASE CHEMISTRY

High-Temperature Kinetic of $AlCl_3$ Decomposition in the Presence of Additives for Chemical Vapor Deposition
L. Catoire and M.T. Swihart.....1

Kinetics and Mechanism of the Thermal Decomposition of Tetrakis (Dimethylamino) Titanium
E. Norton, Jr., and C. Amato-Wierda.....9

Kinetics of Gas-Phase Reactions in the N-H System
S. de Persis, F. Teyssandier, and A. Dollet.....17

CVD of Group 13-15 Binary Materials: Importance of the Association Reactions in the Gas Phase
A. Timoshkin.....25

SURFACE CHEMISTRY

Three Dimensional Monte Carlo Simulation of β-SiC Deposition from the Vapor Phase
G. Chaix, and A. Dollett.....33

Study of Initial Growth of Cu on SiO_2 and 3-mercaptopropyltrimethoxysilane-coated SiO_2
M. Hu, S. Noda, Y. Ogawa, Y. Tsuji, T. Okubo, Y. Yamaguchi, and H. Komiyama.....41

Hydrogen Desorption Kinetics from Silicon-Germanium Alloy Surfaces
P. Parkinson, and J. Ekerdt.....47

Probing the Adsorption of Fluorine on Aluminum (111) Surfaces by Low-Energy Ion Scattering and Density Functional Calculations
R. Bastasz and M.D. Allendorf.....59

Rate Theory of Multicomponent Adsorption of Organic Species from Gas Phase on Silicon Wafer Surface
H. Habuka, M. Shimada, and K. Okuyama.....69

Temperature-Programmed Desorption Study on the Decomposition Mechanism of Ti $(OC_3H_7)_4$ on Si (100)
S.-I. Cho, C.-H. Chung, and S. H.Moon.....76

MECHANISTIC STUDIES

Kinetic Mechanism of Silicon Epitaxial Growth from Chlorosilanes
G. Valente, C. Cavallotti, M. Masi, and S. Carrà.....84

Evaluating the Contributions of Both Catalytic and Thermal Chemistry in Hot-Wire Chemical Vapor Deposition
J. Zhou, A. Overmeyer and C. Wolden.....92

A Mechanism-Based Model of Chemical Vapor Deposition of Epitaxial $Si_{1-x}Ge_x$ Films
M. Stoker, T. Merchant, A. Morton, and J. Hildreth.....100

Reduction of Complex Gaseous Reaction Mechanisms Used in the CVD Process
S. de Persis and F. Teyssandier.....108

Homogeneous and Surface Chemistry of the Chemical Vapor Deposition of Aluminosilicates from Metal Chloride Mixtures in CO_2 and H_2
S. V. Sotirchos and S. F. Nitodas.....116

Fragmentation of the Intramolecularly Coordinated Alane $Me_2NCH_2CD_2CH_2AlBr_2$: A Matrix-Isolation Study
J. Müller and B. Wittig.....124

Role of HCl in CVD Reaction Mechanisms Involving Chloridic Precursors: The Deposition Kinetics of SiC from MTS
D. Neuschütz, C. Delhaes, and J. Müller.....129

PRECURSORS

Automatic Control of Stoichiometry in CVD of Metal Silicates by Alternating Surface Reactions
R. G. Gordon.....136

Zirconium Oxide CVD on Si(100) from Zirconium Tetra-*tert*-Butoxide: Growth Kinetics and Film Microstructure
D. J. Burleson, J. T. Roberts, W. L. Gladfelter, S. A. Cambell, and R.C. Smith.....144

Chemical Deposition Routes to HfO_2: Real-Time Monitoring and Film Growth
K. Forsgren, A. Hårsta, J. Aarik, and A. Aidla 152

Experimental and Numerical Study of the CVD of TiO_2 using New Titanium Precursors
T. Leistner, L. Frey, A. Bauer, C. Schmidt, K. Lehmbacher, P. Härter, W. Herrmann, E. Mešić, P. Kaufmann, L. Kadinski ,and F.Durst 160

DIAGNOSTICS

In-Situ Gas-Phase Optical Measurements of Silane Decomposition in a Thermal Chemical Vapor Deposition Reactor
J.E. Maslar, W.S. Hurst, D.M. Kremer, and S.H. Ehrman 168

Near-Infrared Diode Laser In Situ Monitoring and Control of Chemical Vapor Deposition Processes
P.A. Martin, R.J. Holdsworth, M. Davis, M. E. Pemble, and D. Sheel 176

Photoemission Oscillations Observed in Chemical Beam Epitaxy of GaAs using Triethygallium and Organoarsines
F. Maury, A.M. Gué, and N. Viguier 183

In-Situ-Gas Phase Analysis during Silicon Thin Film Deposition: Molecular Beam Sampling, Laser Ionization and Mass Spectrometry
H. Stafast, F. Falk and E. Witkowicz 191

In Situ Fault Detection and Thickness Metrology using Quadruple Mass Spectrometry
E. A. Rying, G.L. Bilbro, M.C. Öztürk, and J. C. Lu 199

Characterization of Thin Dielectric Layers using the Non-Contact Surface Charge Profiler (SCP) Method
P. Roman, D. D. Lee, J. Wang, P. Mumbauer, R. Grant, J. Tower, E. Kamieniecki, L. Lukasiak, and J. Ruzyllo 207

Characterization of a Multi-Element Diffusion Burner for Combustion Synthesis Studies
P. V. Torek, D. L. Hall, T. A. Miller, and M. S. Wooldridge 213

MODELING

Computer Simulation of WSi_x CVD VLSI Processing Effect of Abnormal Inlet Gas Flows
K. Sugawara, T. Muranushi, T. Takai, Y.K. Chae, Y. Shimogaki, H. Komiyama, and Y. Egashira 221

Modeling of SiGe Epitaxial Growth in a Wide Range of Growth Conditions
A.S. Segal, A.P. Sid'ko, S.Yu. Karpov, and Yu N. Makarov 229

Interaction between Gas Diffusion and Multistable Heterogeneous Chemical Kinetics in C/C Composite Processing
G.L. Vignoles, O. Baconneau, and C.M. Brauner 237

Numerical Simulation of Vapor Phase Deposition Based on Thermodynamics, Kinetics and Mass Transport
C. Bernard 245

Process Analysis and Modeling of Thin Silicon Film Deposition by Hot-Wire Chemical Vapor Deposition
R. Aparicio, R. Birkmire, A. Pant, M. Huff, and T.W.F. Russell 260

Comparison between Computational Modeling and Experiment for a CVD Growth Process of Silicon Films
B. Atakan, M. Hofstätter, and K. Kohse-Höinghaus 268

Modeling of a Silane LPCVD Process Used for Microelectronics and MEMS Fabrication
R.P. Pawlowski, A.G. Salinger, S.D. Habermehl, and P. Ho 276

Theoretical Optimization of A1-CVD using Elementary Reaction Simulation
M. Sugiyama, T. Iino, T. Nakajima, T. Tanaka, H. Itoh, J. Aoyama, Y. Egashira, K. Yamashita, H. Komiyama, and Y. Shimogaki
..... 284

Detailed Modeling of Metal Organic Vapor Phase Epitaxy of III-V Ternary Compounds in Production-Scale AIX 2400G3 Planetary Reactor
E.V. Yakovlev, Y. A. Shpolyanskiy, R.A. Talalaev, S.Y. Karpov, Y.N. Makarov, T. Bergunde, and S.A. Lowry 292

Numerical Simulation of the CVD of SiC Using Different Kinetic Models
V.K. Wunder, N. Popovska, H. Gerhard, G. Emig, L. Kadinski, and F. Durst 300

Two-Dimensional Simulation of Pulsed Power Electronegative Plasmas
B. Ramamurth and D. Economou 308

A Feature Scale Transport and Reaction Model for Atomic Layer Deposition
M.K. Gobbert, and T.J. Cale.....316

Recipe for Implantation and Annealing of N^+ Source and Drain for the 180 nm and 100 nm Technology Nodes
H.J. Li, X. Chen, P. Zeitzoff, K. Torres, and S. Banerjee.....324

Effects of Pulsating Flow on Cleaning of and Deposition into Trenches
I.I. Suni, H. Lin, and A.A. Busnaina.....332

NOVEL MATERIALS AND METHODS

Chemical Vapor Deposition of Hard Coatings: Part 1: Ti-W-C by $TiCl_4 + W(CO)_6 + CH_4$ and Part 2: TiCN and TiN from Tetrakis (Dimethylamido) Titanium
H. Ji, D. Delisle, C. Blais, and C. Amato-Wierda.....340

Codeposition of the Deb-Palladium Hydrogen Getter System
D.W. Carroll, D.R. Pesiri, K.V. Salazar, M. Trkula, J. A. Rau, and C.W. Sandoval.....348

InN Whisker Growth by Chemical Vapor Deposition
H. Parala, A. Devi, F. Hipler, A. Birkner, and R.A. Fischer.....356

Improved Chemical Vapor Deposition of Diamond Layers on Cemented Carbides by Formation of Tungsten-Cobalt-Boron Phases in the Interface Region
R. Cremer, J. Müller, D. Neuschütz, T. Leyendecker, O. Lemmer, M. Frank, and J. Gussone,.....365

Nanophasic CeO_2/ZrO_2 Single and Mixed Oxides Thin Films Obtained by CVD
L. Armelao, D. Barreca, E. Tondello, G.A. Battiston, R. Gerbasi, P. Zanella, S. Barison, S. Daolio, and M. Fabrizio.....373

A Study on Surface Morphology of Si Thin Film Grown by Temperature Modulation Molecular Layer Epitaxy Method
J. Nishizawa, A. Murai, T. Oizumi, T. Kurabayashi, K. Kanamoto, and T. Yoshida.....381

Laser-Assisted Gas-Phase Reactivity of Trimethylaluminum with NH_3 in Constrained Gas Pulse Nozzle Expansions
A. Demchuk, S. Simpson, and B. Koplitz.....389

PLASMA PROCESSING

Gas Phase Analysis of $TiCl_4$ and NH_3 Plasma Processes by Molecular Beam Mass Spectrometry
C.M. Reddy and C. Amato-Wierda.....397

Energy and Angular Distribution of Ions Extracted from a Large Hole in Contact with a High Density Plasma
C.K. Kim and D.J. Economou.....405

Deposition of Indium Oxide Films in Plasma CVD
O. Matsumoto, N. Haraoka, Y. Midorikawa, and K. Itoh.....415

ZnO Film Deposition by Plasma Enhanced CVD Using Zinc-Acetylacetonate
T. Aoki, H. Nonaka, and Y. Hatanaka.....421

AEROSOLS

Nanosized GaN Particles by Chemical Vapor Infiltration
H. Parala, A. Devi, A. Birkner, and R.A. Fischer.....429

Modeling of Aluminum Nanoparticle Formation
R. Schefflan, D. Kalyon, and S. Kovenklioglu.....437

Photothermal Aerosol Synthesis and Characterization of Silicon Nanoparticles
S. Talukdar, X. Li, and M.T. Swihart.....448

Kinetic Monte Carlo Simulation of Homogeneous Nucleation of Hydrogenated Silicon Particles During Silane Decomposition
X. Li, and M.T. Swihart.....455

Modeling Analysis of Gas-Phase Generated Silicon Clusters in a Rotating Disk CVD Reactor
A. Vorob'ev, N.Y. Makarov, and S.U. Karpov.....462

Kinetic Modeling of Particle Formation During Low-Pressure Silane Oxidation and CVD
S.M. Suh, S.L. Girshick, and M.R. Zachariah.....468

Gas-Phase Nucleation in Low-Pressure Silane Plasmas
U.V. Bhandarkar, S.L. Girshick, M.T. Swihart, and U.R. Kortshagen.....481

CFD Modeling of Aerosol Reactors for Material Synthesis
M. Masi, F. di Muzio, and S. Carrà.....488

PROCESS CONTROL

Dynamic Feedback Recipe in CMP Production line
L. Chih-Hung, H. Chi-Yeh, L. Chi-Hung, C. Liang-Keui, and W. Hsing-Hua.....496