ECS Inaugurates Symposium on the Chemistry of Vapor-Phase Materials Synthesis

The Electrochemical Society is inaugurating a symposium entitled "Fundamental Gas-Phase and Surface Chemistry of Vapor-Phase Materials Synthesis," the first of which will be held at the Society's Fall Meeting November 1–6, 1998 in Boston. The Symposium, chaired by T.J. Mountziaris (State University of New York—Buffalo), is endorsed by both the Materials Research Society and EUROCVD. The venue for the conference is the Sheraton Boston Hotel and Towers. The deadline for submission of abstracts is **June 1, 1998.**

This Symposium will address the state-of-the-art in vapor-phase synthesis and processing of materials with emphasis on gas-phase and surface chemistry and its effects on growth/etching rates and material properties. Topics will include chemical vapor deposition (such as thermal, rapid thermal, plasma-assisted, photon-assisted, ion-assisted, and particle-assisted), vapor-phase etching, molecular- and chemical-beam epitaxy, and aerosol synthesis. Both oral and poster presentations will be included.

Papers are sought in the following areas: kinetics of gas-phase and surface reactions underlying the vapor-phase processing of materials, including fundamental measurements of kinetic constants as well as *in situ* probing during film growth/etching and particle synthesis; surface and interfacial chemistry during heteroepitaxy and selective epitaxy; new precursors and growth/etching chemistries; quantum-chemistry calculations for predicting thermochemistry, mechanisms, and rate parameters; *in situ* monitoring and control of materials composition, morphology, electrical, and optical properties; fundamentals and *in situ* monitoring of gas-to-particle conversion; particle formation issues during CVD; and models describing the kinetics and transport phenomena that occur during vapor-phase materials processing, with special emphasis on hierarchical models leading from the molecular to the mesoscopic level (properties) and from the mesoscopic to the macroscopic level (processes).

Invited speakers include R.W. Carr (Minnesota University) whose talk is entitled, "Gas Phase Chemistry in Chemical Vapor Deposition"; S.L. Girshick (Minnesota University), "Numerical Model of Gas-Phase Nucleation and Particle Growth During CVD of Silicon"; J.R. Creighton (Sandia National Laboratories), "Surface Stoichiometry, Structure, and Kinetics of GaAs MOCVD"; M.S. Gordon (Iowa State University), "Potential Energy Surfaces: From the Gas Phase to Surface Chemistry"; R.G. Gordon (Harvard University), "Liquid Precursors for CVD of Metals and Oxides"; R.F. Hicks (University of California—Los Angeles), "Atomic Structure of Compound Semiconductor Surfaces in the MOVPE Environment"; M.L. Hitchman (University of Strathclyde), "Analysis of CVD Processes"; D. Maroudas (UC—Santa Barbara), "Atomic-Scale Modeling of Plasma-Surface Interactions in the PECVD of Silicon"; and P.R. Westmoreland (University of Massachusetts), "Experimental Gas-Phase Kinetics for Parallel-Plate PECVD."

For instructions regarding electronic submission of abstracts and to view the call for papers, use the meeting website at http://www.electrochem.org/meetings/194/meet.html, or contact The Electrochemical Society, 10 South Main Street, Pennington, NJ 08534-2896, USA (e-mail: ecs@electrochem.org) to receive an abstract submission form. Inquiries regarding the symposium may be sent by e-mail to either T.J. Mountziaris (tjm@eng. buffalo.edu) or M.D. Allendorf (mdallen@ sandia.gov).

MARK D. ALLENDORF
SANDIA NATIONAL LABORATORIES

LIBRARY

Advanced Catalysts and Nanostructured Materials: Modern Synthetic Methods

W.R. Moser, Editor
(Academic Press, San Diego, 1996)
xxvi + 592 pages, $85.00
ISBN 0-12-508460-9

Like the proverbial parson's egg, this timely book is good in parts; in a few other parts, however, it is disappointing. As the editor rightly said, "Several disciplines of modern materials sciences are essential to the discovery, development, and improvement of advanced catalysts for chemical, petrochemical, environmental, energy commodity and fine chemical processes." Many of the catalysts in current commercial use are examples of nanostructural materials. Not only is the crystallite size often as little as 2–5 nm, but frequently clusters (of platinum in particular) consisting of less than 20 atoms, mounted on an oxide support, are the quintessential features of the active catalyst.

Solid catalysts are perennially relevant and unendingly fascinating, as we are reminded afresh on reading the admirable chapter on sintering-resistant honeycomb supports by Felthouse et al. who recall that an enterprising Englishman, Peregrine Philips, discovered how to manufacture sulfuric acid from supported platinum catalysts in 1831.

Members of the catalytic cognoscenti, as well as novitiates, will benefit from the worthwhile introduction to many novel preparative methods given in this multi-authored text: hydrodynamic cavitation as a means of producing phase-pure nanocrystals (chap. 12); rapid thermal decomposition of precursors in solution (synonymous with the flow-through hydrothermal method) (chap. 11); the exemplary summaries by Clearfield of the preparation and the catalytic properties of pillared clays, and by Soled et al. (chap. 16) of the production of the evermore important bulk and supported heteropolyacid salts; aerogel synthesis methods (chaps. 2 and 6B); the elegant account of surfactant-stabilized nanoscale colloidal metal catalysts and their precursors (chap. 7); the aerosol (which is also termed spray pyrolysis and mist decomposition) method of preparing advanced catalytic material (chaps. 19, 21, and 22); and the gas-phase synthesis of nonstoichiometric nanocrystals by Ying and Tschöpe are all noteworthy.

The opening chapter (by Mobil scientists Vartuli et al.) appropriately focuses on one of the most exciting developments in catalysis and surface science in recent years: the designed synthesis of mesoporous molecular sieve systems. My only disappointment about this chapter is that far too little attention is given to postsynthesis functionalization of the pore walls, which is undoubtedly one of the crucial growth areas in catalysis science and technology in recent years. (For an up-to-date summary of this important area, consult the succinct summaries of Maschmeyer and Zhao et al. in *Current Opinion in Solid State and Materials Science* **3** [1998] 71, 111.)

Chapter 13, devoted to nanocrystalline zeolites, disappointed me most. The only