

Primary MRSEC Support

IRG1

M. Hernandez-Contreras, P. **Pincus**, "Structure and interaction between ionic layers," *J. of Chemical Physics* **111**, 954 (2000)

A.W.C. Lau, D. Levine, P. **Pincus**, "Novel electrostatic attraction from plasmon fluctuations," *Physical Review Letters* **84**, 4116 (2000)

IRG2

B.A. Adair, G. Díaz de Delgado, J.M. Delgado, A.K. **Cheetham**, "A framework antimony(III) phosphate: Synthesis and structure of NaSb₃O₂(PO₄)₂," *J. Solid State Chem.* **151**, 21 (2000)

B.A. Adair, G. Díaz de Delgado, J.M. Delgado, A.K. **Cheetham**, "On the synthesis and characterization of open-framework antimony(III) diphosphonates," *Solid State Sciences* **2**, 119 (2000)

B.A. Adair, G. Díaz de Delgado, J.M. Delgado, A.K. **Cheetham**, "Synthesis and characterization of an open-framework antimony(III) phosphate: [(SbO)₂(SbF)₂(PO₄)₃]₃- {1.5[H₃N(CH₂)₂NH₃]}₃+", *Angew. Chem.* **39**, 745 (2000)

S. Parashar, A. dos Santos, A.R. Raju, F.F. **Lange**, A.K. **Cheetham**, C.N.R. Rao, "Charge ordering in thin films of bilayered rare-earth manganates," *Intl. J. Inorg. Mater.* **2**, 651 (2000)

IRG3

G. Subramanian, R.P. Hjelm, T.J. **Deming**, G.S. Smith, Y. Li, C.R. **Safinya**, "Structure of complexes of cationic lipids and poly(glutamic acid) polypeptides: A pinched lamellar phase," *Journal of the American Chemical Society* **122**, 26 (2000)

IRG4

Y.T. Hu, D.J. **Pine**, L.G. **Leal**, "Drop deformation, breakup, and coalescence with compatibilizer," *Physics of Fluids* **12**, 484 (2000)

Partial MRSEC Support

IRG1

N.A. Alcantar, E.S. Aydil, J.N. Israelachvili, "Polyethylene glycol-coated biocompatible surfaces," *J. Biomed. Mater. Res.* 51, 343 (2000)

H.G. **Hansma**, L.I. Pietrasanta, I.D. Auerbach, C. Sorenson, R. Golan, P.A. Holden, "Probing biopolymers with the atomic force microscope: a review," *Journal of Biomaterials Science, Polymer Edition* **11**, 675 (2000)

H.G. **Hansma**, L.I. Pietrasanta, R. Golan, J.C. Sitko, M. Viani, G. Paloczi, B.L. Smith, D. Thrower, P.K. **Hansma**, "Recent highlights from atomic force microscopy of DNA," *Biological Structure and Dynamics Conversation* **11**, 271 (2000)

J.H. Kindt, J.C. Sitko, L.I. Pietrasanta, E. Oroudjev, N. Becker, M.B. Viani, H.G. **Hansma**, "Methods for biological probe microscopy in aqueous fluids," *Atomic Force Microscopy in Cell Biology*, ed. by B.P. Jena, H. Hoerber, Academic Press (2000)

I. Koltover, K. Wagner, C.R. **Safinya**, "DNA condensation in two-dimensions," *Proceedings of the National Academy of Sciences USA* **97**, 14046 (2000)

Y. Li, G.C.L. Wong, R. Case, C.R. **Safinya**, E.J. Caine, E.L. Hu, D. Haeffner, P. Fernandez, "Diffractive focusing properties of a GaAs linear Bragg-Fresnel lens in the hard X-ray regime," *Applied Physics Letters* **77**, 313 (2000)

A.J. Lin, N.L. Slack, A. Ahmad, I. Koltover, C.X. George, C.E. **Samuel**, C.R. **Safinya**, "Structure and structure-function studies of lipid/plasmid DNA complexes," *J. of Drug Targeting* **8**, 13 (2000)

M. Seitz, E. Ter-Ovanesyan, M. Hausch, C.K. Park, J.A. **Zasadzinski**, R. Zentel, J.N. **Israelachvili**, "Formation of tethered supported bilayers by vesicle fusion onto lipopolymer monolayers promoted by osmotic stress," *Langmuir* **16**, 6067 (2000)

M.N. Tamashiro, H. Schiessel, "Stepwise unwinding of polyelectrolytes under stretching," *Macromolecules* **33**, 5263 (2000)

G.C.L. Wong, J.X. Tang, A. Lin, Y. Li, P.A. Janmey, C.R. **Safinya**, "Hierarchical self-assembly of F-Actin and cationic lipid complexes: Stacked three-layer tubule networks," *Science* **288**, 2035 (2000); also "Chemistry Highlights 2000", in *Chemical and Engineering News*, Dec. 18, 2000 (also selected for the Cover page), see also "Actin and Membrane equals Tubular Capsules", in *Chemical and Engineering News, News of the Week*, by M. Jacoby, pg. 11, June 19, 2000

IRG2

B.A. Adair, A.K. **Cheetham**, "Synthesis and structure of Sb₅PO₁₀, a new phosphate of antimony(III)," *J. of Solid State Chemistry* **155**, 451 (2000)

D.N. Argyriou, H.N. Bordallo, B.J. Campbell, A.K. Cheetham, D.E. Cox, J.S. Gardner, K. Hanif, A. dos Santos, G.F. Strouse, "Charge ordering and phase competition in the layered perovskite LaSr₂Mn₂O₇," *Phys. Rev. B* **61**, 15269 (2000)

M.P. Attfield, A.K. **Cheetham**, S. Natarajan, "The direct synthesis and characterization of the pillared layer indium phosphate $\text{Na}_4[\text{In}_8(\text{HPO}_4)_{14}(\text{H}_2\text{O})_6] \cdot 12\text{H}_2\text{O}$," *Mater. Res. Bull.* **35**, 1007 (2000)

M.P. Attfield, S.J. Weigel, F. Taulelle, A.K. **Cheetham**, "Synthesis and characterization of a linear $[\text{Cu}(\text{pyr})_2]_{2+}$ complex in siliceous ferrierite," *J. Mater. Chem.* **10**, 2109 (2000)

L.M. Bull, B. Bussemer, T. Anupold, A. Reinhold, A. Samoson, J. Sauer, A.K. **Cheetham**, R. Dupree, "A high resolution 170 NMR study of siliceous zeolite ferrierite and ab initio cluster calculations of NMR parameters," *J. Amer. Chem. Soc.* **122**, 4948 (2000)

B.J. Campbell, J.M. Delgado, A.K. **Cheetham**, B.B. Iversen, N.P. Blake, S.R. Shannon, S. Lattner, G.D. **Stucky**, "The cation-vacancy ordering transition in dehydrated Na_6 sodalite," *J. of Chem. Phys.* **113**, 10226 (2000)

J.N. Cha, K. Shimizu, Y. Zhou, S.C. Christiansen, B.F. **Chmelka**, T.J. **Deming**, G.D. **Stucky**, D.E. **Morse**, "Learning from biological systems: Novel routes to biomimetic synthesis of ordered silica structures," *Mater. Res. Soc. Symp. Proc.* **599**, 239 (2000)

J.H. Kindt, J.B. Thompson, G.T. Palocz, M. Michenfelder, B.L. Smith, G. **Stucky**, D.E. **Morse**, P.K. **Hansma**, "Angular Fourier mapping: Highlighting lattice structures without destroying original data," *Materials Research Soc. Symp.* **620**, 1-7 (2000)

M.D. Mann, B.F. **Chmelka**, "Measurement of dilute ^{29}Si silicate species in solution using a large volume coil and DEPT NMR analytical chemistry," *Analytical Chemistry* **72**, 5131 (2000)

D.E. **Morse**, "Silicon biotechnology: Proteins, genes and molecular mechanisms controlling biosilica nanofabrication offer new routes to polysiloxane synthesis," in Organosilicon Chemistry IV: From Molecules to Materials, N. Auner, N. & J. Weis, eds.; Wiley - VCH. New York, 5 (2000)

C.N.R. Rao, A. Arulraj, A.K. **Cheetham**, B. Raveau, "Charge-ordering in rare earth manganates," *J. Phys: Condensed Matter* **12**, R83 (2000)

K. Shimizu, D.E. **Morse**, "Biological and biomimetic synthesis of silica and other polysiloxanes," in Biom mineralization: from Biology to Biotechnology and Medical Application. E. Baeuerlein, ed.; Wiley-VCH, New York; 207 (2000)

B.L. Smith, G.T. Paloczi, P.K. **Hansma**, R.P. Levine, "Discerning nature's mechanism for making complex biocomposite crystals," *J. of Crystal Growth* **211**, 116 (2000)

R.M.D. Stevens, N.A. Frederick, B.L. Smith, D.A. Walters, D.E. **Morse**, G.D. **Stucky**, P.K. **Hansma**, "Carbon nanotubes as probes for atomic force microscopy," *Nanotechnology* **11**, 1 (2000)

J.B. Thompson, G.T. Paloczi, J.H. Kindt, M. Michenfelder, B.L. Smith, G.D. **Stucky**, D.E. **Morse**, P.K. **Hansma**, "Direct observation of the transition from calcite to aragonite growth as induced by abalone shell proteins," *Biophysical J.* **79**, 3307 (2000)

P.V. Vanitha, K. Vijaya Sarathy, A.K. Cheetham, C.N.R. Rao, "Absence of ferromagnetism in electron-doped rare-earth manganates, $\text{Ln}_{1-x}\text{A}_x\text{MnO}_3$ ($x > 0.5$)," *Solid State Communications* **115**, 463 (2000)

IRG3

J.N. Cha, G.D. **Stucky**, D.E. **Morse**, T.J. **Deming**, "Biomimetic synthesis of ordered silica structures mediated by block copolypeptides," *Nature* **403**, 289 (2000)

T.J. **Deming**, S.A. Curtin, "Chain initiation efficiency in cobalt- and nickel-mediated polypeptide synthesis," *J. Am. Chem. Soc.* **122**, 5710 (2000)

T. Ebina, T. Iwasaki, Y. Onodera, A. Chatterjee, G.D. **Stucky**, "Comparative studies of XPS and DFT calculations on smectites," *Recent Res. Dev. Pure Appl. Chem.* **4**, 125 (2000)

J.S. Lettow, Y.J. Han, P. Schmidt-Winkel, P. Yang, D. Zhao, G.D. **Stucky**, J.Y. Ying, "Hexagonal to mesocellular foam phase transition in polymer-templated mesoporous silicas," *Langmuir* **16**, 8291 (2000)

M.D. McGehee, A.J. **Heeger**, "Semiconducting (conjugated) polymers as materials for solid state lasers," *Advanced Materials* **12**, 1655 (2000)

N.A. Melosh, P. Davidson, B.F. **Chmelka**, "Monolithic mesophase silica with large ordering domains," *J. Am. Chem. Soc.* **122**, 823 (2000)

E.K. Miller, F. Hingerl, C.J. Brabec, A.J. **Heeger**, N.S. Sariciftci, "Reflectance anisotropy spectroscopy of oriented films of semiconducting polymers," *J. Chem. Phys.* **113**, 789 (2000)

C.Y. Ryu, G.H. **Fredrickson**, E.J. **Kramer**, S.F. Hahn, "Chain architecture effect on fracture of semicrystalline-glassy block copolymers," *Proceedings of 11th Int'l. Conference on Deformation, Yield and Fracture of Polymers*; Churchill College, Cambridge, U.K. (April 10-13, 2000)

P. Schmidt-Winkel, C.J. Glinka, G.D. **Stucky**, "Microemulsion templates for mesoporous silica," *Langmuir* **16**, 356 (2000)

P. Schmidt-Winkel, W.W. Lukens, Jr., P. Yang, D.I. Margolese, J.S. Lettow, J.Y. Ying, G.D. **Stucky**, "Microemulsion templating of siliceous mesostructured cellular foams with well-defined ultralarge mesopores," *Chem. Mater.* **12**, 686 (2000)

C.Y. Yang, A.J. **Heeger**, Y. Cao, "Microstructure of gel-processed blends of conjugated polymer and ultra-high molecular weight polyethylene," *Polymer* **41**, 4113 (2000)

C.Y. Yang, K. Lee, A.J. **Heeger**, "Tensile drawing induced symmetry in PPV films," *J. Molec. Science* **521**, 315 (2000)

P. Yang, G. Wirnsberger, S.R. Cordero, H.C. Huang, B. Scott, M.D. McGehee, G.M. Whitesides, B.F. **Chmelka**, S.K. Buratto, G.D. **Stucky**, "Mirrorless lasing from mesostructured waveguides patterned by soft lithography," *Science* **287**, 465 (2000)

H. Yokoyama, E.J. **Kramer**, G.H. **Fredrickson**, "Simulation of diffusion of asymmetric diblock and triblock copolymers in a spherical domain structure," *Macromolecules* **33**, 2249 (2000)

H. Yokoyama, T. Mates, E.J. **Kramer**, "Structure of asymmetric diblock copolymers in thin films," *Macromolecules* **33**, 1888 (2000)

IRG4

G.E. Beltz, D.M. Lipkin, "A dislocation model for the directional anisotropy of grain boundary fracture," *MRS Bulletin* **25**, 21 (2000)

M.L. Falk, J.S. **Langer**, "From simulation to theory in the physics of deformation and fracture," *Materials Research Society Bulletin* **25**, 40 (2000)

Y. Golan, N.A. Alcantar, T.L. Kuhl, J.N. **Israelachvili**, "Generic substrate for the surface forces apparatus: deposition and characterization of silicon nitride surfaces," *Langmuir* **16**, 6955 (2000)

J.S. **Langer**, "Viscoplasticity and the dynamics of brittle fracture," *Phys. Rev. E* **62**, 1351 (2000)

J.S. **Langer**, M.L. Falk, "From simulation to theory in the physics of deformation and fracture," *Materials Research Society Bulletin* **25**, 40 (2000)

Shared Facilities

A. Bentien, A.E.C. Palmqvist, J.D. Bryan, S. Latturmer, G.D. **Stucky**, L. Furenlid, B.B. Iversen, "Experimental charge densities of semiconducting cage structures containing alkaline earth guest atoms," *Angewandte Chemie-International Edition* **39**, 3613 (2000)

A.M. Davidson, C.F. Mellot, J. Eckert, A.K. **Cheetham**, "An inelastic scattering and NIR-FT Raman spectroscopy study of chloroform and trichloroethylene in faujasites," *J. Phys. Chem. B.* **104**, 432 (2000)

C.R. Elsass, T. Mates, B. Heying, C. Poblenz, P. Fini, P.M. Petroff, S.P. DenBaars, J.S. **Speck**, "Effects of growth conditions on the incorporation of oxygen in AlGa_N layers grown by plasma assisted molecular beam epitaxy," *Appl. Phys. Lett.* **77**, 3167 (2000)

C.R. Elsass, I.P. Smorchkova, B. Heying, E. Haus, C. Poblenz, P. Fini, K. Maranowski, P.M. Petroff, S.P. DenBaars, U.K. Mishra, J.S. **Speck**, A. Saxler, S. Elhamri, W.C. Mitchel, "Electron transport in AlGa_N/Ga_N heterostructures grown by plasma-assisted molecular beam epitaxy," *Jpn. J. Appl. Phys.* **39**, L1023 (2000)

P. Fini, H. Marchand, J.P. Ibbetson, S.P. DenBaars, U.K. Mishra, J.S. **Speck**, "Determination of tilt in the lateral epitaxial overgrowth of Ga_N using X-ray diffraction," *J. Crystal Growth* **209**, 581 (2000)

P. Fini, A. Munkholm, C. Thompson, G.B. Stephenson, J.A. Eastman, R.M.V. Murty, O. Auciello, L. Zhao, S.P. DenBaars, J.S. **Speck**, "In situ, real-time measurement of wing tilt during lateral epitaxial overgrowth of Ga_N," *Appl. Phys. Lett.* **76**, 3893 (2000)

J. Genzer, E. Sivaniah, E.J. **Kramer**, J.G. Wang, H. Korner, K. Char, C.K. Ober, B.M. DeKoven, R.A. Bubeck, D.A. Fischer, S. Sambasivan, "Temperature dependence of molecular orientation on the surfaces of semifluorinated polymer thin films," *Langmuir* **16**, 1993 (2000)

J. Genzer, E. Sivaniah, E.J. **Kramer**, J.G. Wang, H. Korner, M.L. Xiang, K. Char, C.K. Ober, B.M. DeKoven, R.A. Bubeck, M.K. Chaudhury, S. Sambasivan, D.A. Fischer, "The orientation of semifluorinated alkanes attached to polymers at the surface of polymer films," *Macromolecules* **33**, 1882 (2000)

J. Genzer, E. Sivaniah, E.J. **Kramer**, J.G. Wang, M.L. Xiang, K. Char, C.K. Ober, R.A. Bubeck, D.A. Fischer, M. Graupe, R. Colorado, O.E. Shmakova, T.R. Lee, "Molecular orientation of single and two-armed monodendron semifluorinated chains on "soft" and "hard" surfaces studied using NEXAFS," *Macromolecules* **33**, 6068 (2000)

Y. Golan, C. Drummond, J. **Israelachvili**, R. Tenne, "In-situ imaging of shearing contacts in the Surface Forces Apparatus," *Wear* **245**, 190 (2000)

T. Hayakawa, J. Wang, M. Xiang, X. Li, M. Ueda, C.K. Ober, J. Genzer, E. Sivaniah, E.J. **Kramer**, D.A. Fisher, "The effect of changing molecular end groups on surface properties: Synthesis and characterization of poly(Styrene-b-Semifluorinated Isoprene) block copolymers with -CF₂H end groups," *Macromolecules* **33**, 8012 (2000)

J. Heier, E.J. **Kramer**, J. Groenewold, G.H. **Fredrickson**, "Kinetics of individual block copolymer island formation and disappearance near an absorbing boundary," *Macromolecules* **33**, 6060 (2000)

B. Heying, R. Averbeck, L.F. Chen, E. Haus, H. Riechert, J.S. **Speck**, "Control of GaN surface morphologies using plasma-assisted molecular beam epitaxy," *J. Appl. Phys.* **88**, 1855 (2000)

W.K. Hsu, W.Z. Li, Y.Q. Zhu, M. Terrones, H. Terrones, N. Yao, J.P. Zhang, N. Grobert, S. Firth, J.H. Clark, J.P. Hare, A.K. **Cheetham**, H.W. Kroto, D.R.M. Walton, "KCI crystallization within the space between carbon nanotube walls," *Chem. Phys. Lett.* **317**, 77 (2000)

S.K. Mathis, P. Chavarkar, A.M. Andrews, U.K. Mishra, J.S. **Speck**, "Reactive removal of misfit dislocations from InGaAs on GaAs by lateral oxidation," *Appl. Phys. Lett.* **77**, 845 (2000)

S.K. Mathis, P. Chavarkar, A.M. Andrews, U.K. Mishra, J.S. **Speck**, "Strain relaxation of InGaAs by lateral oxidation of AlAs," *J. Vac. Sci. Tech. B* **18**, 2066 (2000)

A. Saxler, P. Debray, R. Perrin, S. Elhamri, W.C. Mitchel, C.R. Elsass, I.P. Smorchkova, B. Heying, E. Haus, P. Fini, J.P. Ibbetson, S. Keller, P.M. Petroff, S.P. DenBaars, U.K. Mishra, J.S. **Speck**, "Characterization of an AlGa_N/Ga_N two-dimensional electron gas structure," *J. Appl. Phys.* **87**, 369 (2000)

A. Saxler, P. Debray, R. Perrin, S. Elhamri, W.C. Mitchel, C.R. Elsass, I.P. Smorchkova, B. Heying, E. Haus, P. Fini, J.P. Ibbetson, S. Keller, P.M. Petroff, S.P. DenBaars, U.K. Mishra, J.S. **Speck**, "Electrical transport of an AlGa_N/Ga_N two-dimensional electron gas," *MRS Symp. Proc.*, (2000).

I.P. Smorchkova, S. Keller, S. Heikman, C.R. Elsass, B. Heying, P. Fini, J.S. **Speck**, U.K. Mishra, "Two-dimensional electron-gas Al_N/Ga_N heterostructures with extremely thin Al_N barriers," *Appl. Phys. Lett.* **77**, 3998 (2000)

N. Stock, G. Férey, A.K. **Cheetham**, "Hydrothermal synthesis and characterization of a chromium(II) pyrophosphate, Na₂CrP₂O₇·0.5H₂O," *Solid State Sciences* **2**, 307 (2000)

N. Stock, S.A. Frey, G.D. **Stucky**, A.K. **Cheetham**, "Synthesis and characterization of two manganese phosphonocarboxylates: Mn₃(O₃PCH₂COO)₂ and Mn₃(O₃PCH₂CH₂COO)₂," *J. Chem. Soc., Dalton Trans.*, 4292 (2000)

N. Stock, G.D. **Stucky**, A.K. **Cheetham**, "The hybrid open-framework of tin(II) phosphonopropionate oxalate, Sn₄(O₃PCH₂CH₂CO₂)₂(C₂O₄)," *Chem. Commun.*, 2277 (2000)

M. Xiang, X. Li, C.K. Ober, K. Char, J. Genzer, E. Sivaniah, E.J. **Kramer**, D.A. Fischer, "Surface stability in liquid crystalline block copolymers with semifluorinated monodendron side groups," *Macromolecules* **33**, 6106 (2000)

H. Yokoyama, E.J. **Kramer**, "Diffusion of triblock copolymers in a spherical domain structure," *Macromolecules* **33**, 954 (2000)

H. Yokoyama, E.J. **Kramer**, "Mutual diffusion of asymmetric block copolymers with homopolymers," *Macromolecules* **33**, 1871 (2000)

L. Zhao, H. Marchand, P. Fini, S.P. DenBaars, J.S. **Speck**, "Polarity determination for MOCVD growth of GaN on Si(111) by convergent beam electron diffraction," *MRS Internet J. Nitride Semi. Res.* **5** (Supp1), U94 (2000)