10.1071/CHv58n9toc Volume 58, Number 9, 2005, xxvi

Oil emulsions can violently dewet their own solid crystals; if the crystallization and dewetting rates are similar, the droplet may be propelled on a crystalline 'comet tail'. Learn more in the Communication by Spicer and Hartel (p. 655).

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Foreword

Australian Colloid and Interface Symposium 2005 Special Issue

Patrick G. Hartley, Gregory G. Warr

Aust. J. Chem. **2005**, *58*, 625–626.

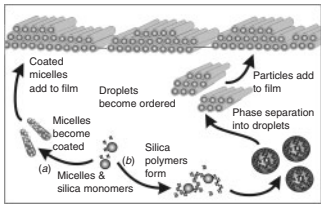
Functional interfaces, advanced coatings, nanobiotechnology, biointerfaces, light and neutron scattering, food science, and solid–liquid separations were features of ACIS 2005. Selected papers from that broad-based meeting are presented in this issue.

Reviews

Current Understanding of Formation Mechanisms in Surfactant-Templated Materials

Karen J. Edler

Aust. J. Chem. **2005**, *58*, 627–643.

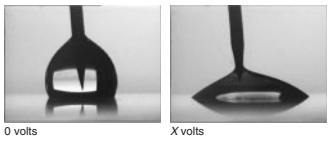


Surfactant micelles form a wide variety of stable and uniform structures in solution. These self-assembled shapes may impose structure on other materials. Mechanisms through which this general technique creates nanoscale structures from dilute solutions are reviewed here. The graphic shows a formation mechanism for preparing silicaeous tubes templated with micelles at (*a*) high and (*b*) moderate silica concentrations.

Solid–Liquid Interactions and Functional Surface Wettability

John Ralston

Aust. J. Chem. **2005**, *58*, 644–654.



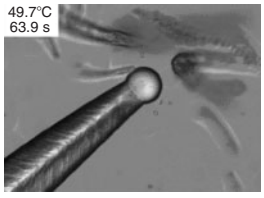
Wettability reflects the interaction between a solid and liquid interface. At the molecular level this interaction depends on a number of familiar chemical concepts such as surface charge, charge distribution, and hydrogen bonding, and these may be manipulated by stimuli such as charge, light, or heat. This review explores how such stimuli modulate wettability; in the example shown an applied potential changes the drop–surface interaction ('electrowetting').

Rapid Communications

Crystal Comets: Dewetting During Emulsion Droplet Crystallization

Patrick T. Spicer, Richard W. Hartel

Aust. J. Chem. **2005**, *58*, 655–659.



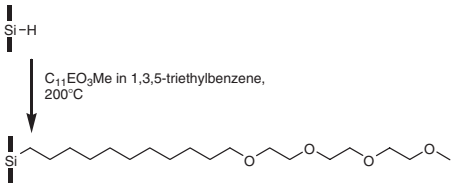
Dewetting-dominated crystallization dynamics of three lipids in aqueous surfactant solutions were studied. Crystal shape was controlled by the competition between dewetting and crystallization rates. Dewetting can produce vigorous propulsion of droplets around the liquid phase, leaving characteristic elongated solids within the liquid.

Evidence for Why Tri(ethylene oxide) Functionalized Si–C Linked Monolayers on Si(111) Have Inferior Protein Antifouling Properties Relative to the Equivalent Alkanethiol Monolayers Assembled on Gold

Till Böcking, Michael Gal, Katharina Gaus, J. Justin Gooding

Aust. J. Chem. **2005**, *58*, 660–663.

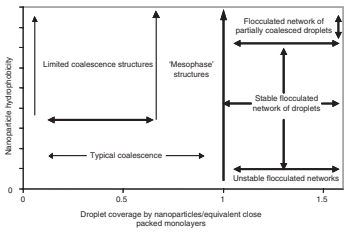
High quality methoxy-terminated monolayers were formed on Si(111)-H surfaces in a novel thermal hydrosilylation reaction (shown). X-ray photoelectron, contact angle, and X-ray reflectivity measurements suggest that the suboptimal protein antifouling properties of these Si–C linked monolayers were due to a reduced lateral packing density of the chains resulting in a disordered layer with insufficient hydrophilicity.



Nanoparticles at the Polydimethylsiloxane Droplet/Water Interface

Spomenka Simovic, Clive A. Prestidge

Aust. J. Chem. **2005**, *58*, 664–666.

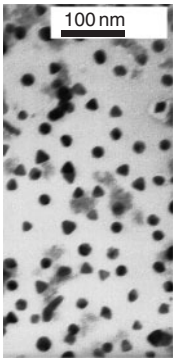


The interfacial properties of oil droplets in an aqueous medium, such as coalescence stability and the transfer of material out of the droplet, can be modified though a adsorbed nanoparticle layer. Silica nanoparticles, both hydrophilic and modified to be hydrophilic, provides control of these properties.

Controlled Growth of Sonochemically Synthesized Gold Seed Particles in Aqueous Solutions Containing Surfactants

Kenji Okitsu, Boon Mian Teo, Muthupandian Ashokkumar, Franz Grieser

Aust. J. Chem. **2005**, *58*, 667–670.

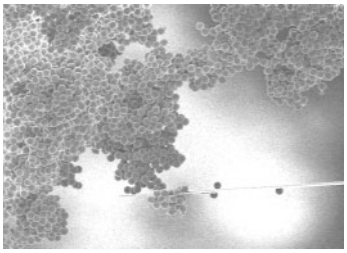


Gold nanoparticles are useful components in analytical probes, bio-markers, catalysts, and sensors. Seed nanoparticles may be prepared through electrochemical and laser/photo irradiation techniques, but the size and shape of the particles produced depends strongly upon the chemistry of the growth medium (types of reductants and stabilizers, temperature, solute concentration). The sonochemical method reported here avoids chemical reductants, and hence the products can be used as seed particles without any pretreatment prior to the subsequent growth process.

Analyzing the Compaction of High-Porosity Microscopic Agglomerates

Lars-Oliver Heim, Hans-Jürgen Butt, Rainer Schräpler, Jürgen Blum

Aust. J. Chem. **2005**, *58*, 671–673.



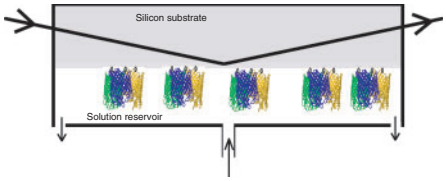
From industrial filtration to planetary formation, the physical properties of agglomerates and how microscopic and macroscopic properties relate are key concepts. A instrument that combines atomic force microscopy with scanning electron microscopy is used in this study to image transformations upon compressing microscopic agglomerates and directly observe the elastic and plastic contributions.

Neutron Reflectometry of Membrane Protein Assemblies at the Solid/Liquid Interface

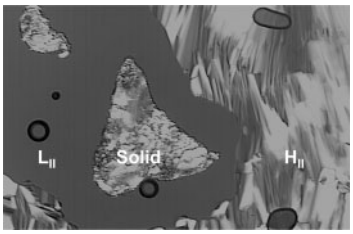
Stephen A. Holt, Jeremy H. Lakey, Sofian M. Daud, Neil Keegan

Aust. J. Chem. **2005**, *58*, 674–677.

The construction of two-dimensional arrays of membrane proteins at interfaces is of particular interest for the development of post-genomic technologies. This paper reports structural studies of the self-assembly of an outer membrane protein, where the protein orientation is controlled and the secondary and tertiary structure is retained.



Full Paper



Focus