Complex structure formation in ultrathin films and at liquid/gas interfaces

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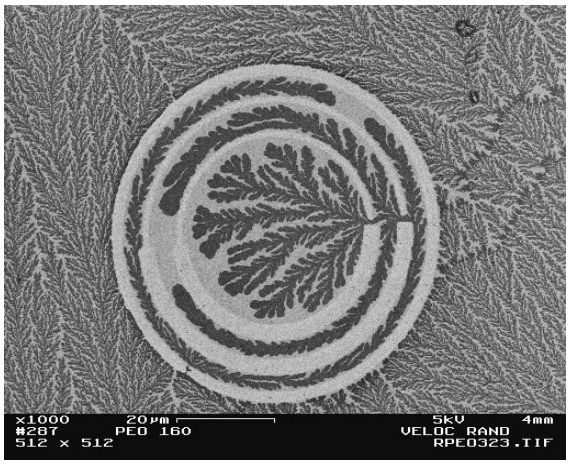
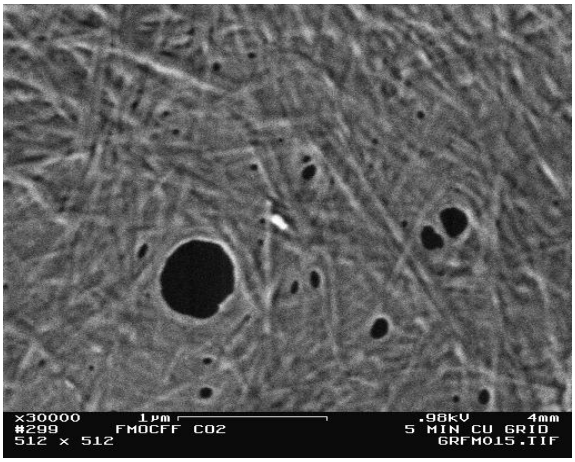
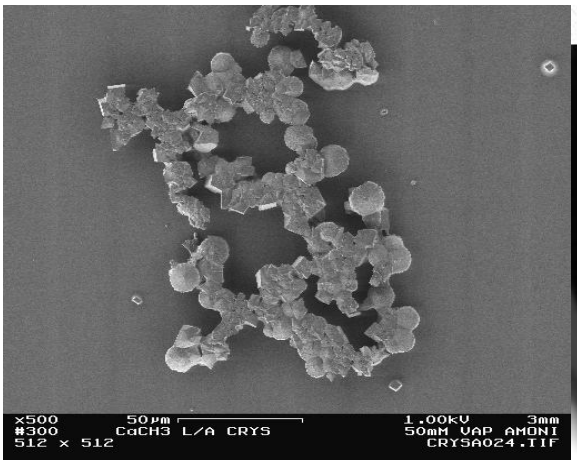
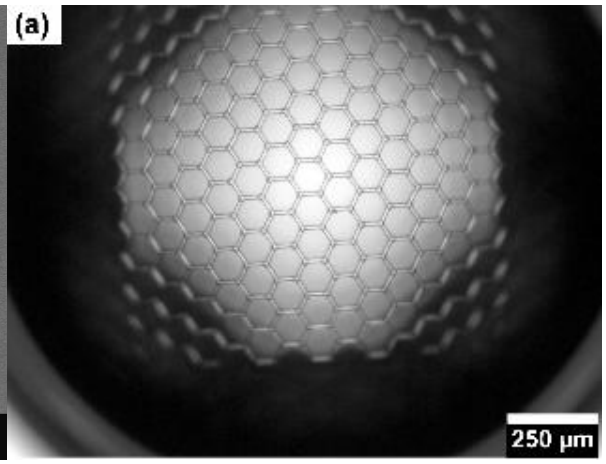
Self organization of different systems at interfaces or in ultrathin films will be discussed.
Ultrathin (3nm) Polyethyleneoxide (PEO) films (left upper image) which are initially amorphous and metastable can self-assemble into dendritic lamella structures during crystallization. Patterning of the amorphous films will demonstrate the influence of surface confinement onto the diffusion limited growth process (DLA) that takes place. (1)
The pH triggered aggregation of oligopeptide molecules (FmocFF) at the liquid/gas interface will be shown to produce nanosized networks of peptide fibrills which are crystallographically characterized by electron diffraction. (right upper image) (2).
The formation of calziumcarbonate microparticles at the liquid/gas interface which self-assembly into extended (meter sized) stable floating rafts (left lower image) is another example of interfacial self-assembly. The stability of free floating rafts at the liquid/gas interface will be discussed on artifical microstrcutured floating membranes with predefined pore sizes (right lower image) (3).









1) E. Meyer & H.-G. Braun, Journal of Physics, 17 (2005) S623 – S635

2) H.-G. Braun & A. Zamith-Cardoso, Colloids and Surfaces B: Biointerfaces 97 (2012) 43-50

3) René Hensel and Hans-Georg Braun, Soft Matter, 2012,8, 5293-5300