



## Dr. Aydin K. Sunol Professor

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### Education:

Ph.D. Chemical Engineering, VPI and SU, Blacksburg, VA, 1982  
M.Eng. Industrial Engineering, VPI and SU, Blacksburg, VA, 1982  
B.S. ChE, Bogazici University, Istanbul, Turkey, 1975

**Research Interests:** *Systems Engineering, Supercritical fluid technology, Green Engineering, Product and Process Design*

### Recent Research Projects:

*Environmentally Friendly Pathways for Development of Materials*  
*Thermodynamic and Transport Property Measurement and Estimation at High Pressure*  
*Separations Using Supercritical Fluids*  
*Development of Spiral Curriculum and Web-based Teaching Modules for Design*  
*Reactions at High Pressure*  
*Product and Process Design*  
*Green Engineering*

### Supercritical Fluid Aided Development of Materials

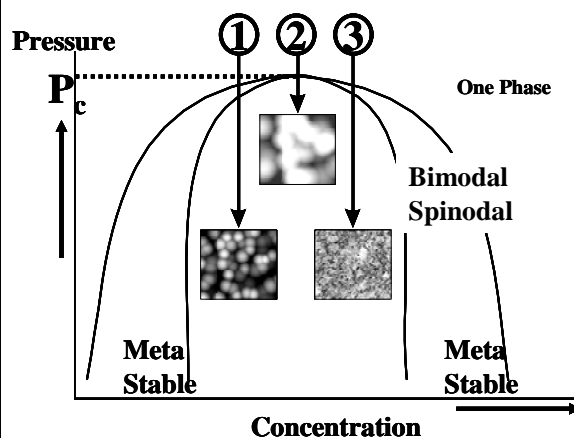
Supercritical fluids such as carbon dioxide and water provide an excellent tunable environment for materials processing. The applications range from the impregnation of wood with preservatives for basic industries, to the synthesis of nanoparticles for high technology and pharmaceutical applications. The current focus of this project is the synthesis of aero gels, the encapsulation of particles for timed release applications, and the impregnation of porous media.

**Faculty/Industry Collaborators:** Dr. Sermin Sunol;  
Dr. John Kosky (MEI)

**Current funding:** Florida High Tech Counsel, NSF, Donovan Industries, Temp Troll, AMTI, Previous funding: ONR; NASA, International Paper, KAMYR, MEI, Thar Design, Psiloquest

**General Area/Focus:** Design and Development of Sustainable Systems

**Application(s):** Applications range from basic industries, such as impregnation of forest products (wood) with preservatives, to high technology/pharmaceutical applications of nanoparticles. Current focus: synthesis of aero gels, encapsulation of particles for timed release applications, and impregnation of porous media



- ① Nucleation and Growth at low concentrations
- ② Spinodal decomposition path
- ③ Nucleation and Growth at High Concentrations

Material Synthesis Pathways in Supercritical Fluids