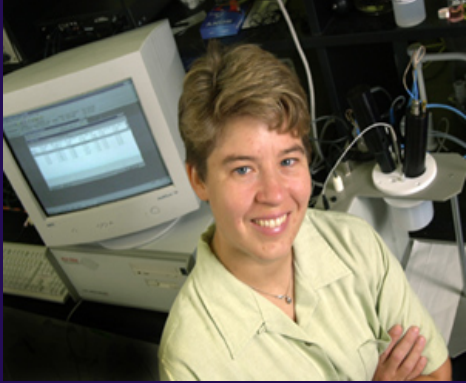
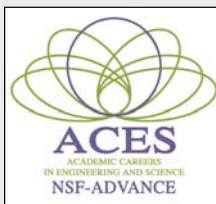


# NSF-ADVANCE Distinguished Lecture



**Dr. Jennifer Lewis**

*Hans Thurnauer*  
*Professor of*  
*Materials Science*  
*and Engineering,*  
*University of*  
*Illinois, Urbana-*  
*Champaign*



*Hosted by the Department of Materials Science & Engineering*

## *Direct-write Assembly of 3-D Periodic Structures from Colloidal and Organic Ink*

**Monday, March 28, 2005 at 4 PM**

**White Building, Room 411**

Light refreshments served from 3:30 PM

**Abstract:** This talk will feature examples from our recent efforts in engineering inks from colloidal, nanoparticle, and organic building blocks. First, the design of concentrated colloidal and nanoparticle inks with viscoelastic properties suitable for writing 3-D periodic structures with minimum feature sizes as low as 10  $\mu\text{m}$  is described. Next, the assembly of 3-D microfluidic networks comprised of interconnected microchannels from fugitive organic inks will be illustrated. Finally, new advances in polyelectrolyte-based inks that enable the fabrication of 3-D micro-periodic structures with submicron features will be highlighted. The myriad of 3-D inks under development offers the potential to architect complex structures required for structural and functional composites, tissue engineering scaffolds, microfluidic networks, as well as photonic band gap materials.

*Professor Jennifer Lewis received a Sc.D. from the Massachusetts Institute of Technology (1991), and is Professor of Materials Science & Engineering and of Chemical engineering, and is a faculty affiliate with the Beckman Institute. Prof. Lewis and Glen Kirby, Ph.D. student, won the 2003 Brunauer Award from the American Ceramic Society for their paper entitled "Rheological Property Evolution in Concentrated Cement-Polyelectrolyte Suspensions" published in the December 2002 issue of the Journal of the American Ceramic Society. Her other honors include: University Scholar, University of Illinois (2002), Selection to the Frontiers of Engineering Symposium (2000), Allied Signal Foundation Awards (1998, 1999), Xerox Award for Faculty Research (1996 & 2001), Schlumberger Foundation Award (1995), Burnett Teaching Award (1994), and NSF Presidential Faculty Fellow Award (1994)*

*With generous support from the National Science Foundation ADVANCE award, the Academic Careers in Engineering and Science (ACES) program at Case Western Reserve University seeks to contribute to the development of a national science and engineering workforce that includes the full participation women at all levels of faculty and academic leadership.*

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