



**TIFR Centre for Interdisciplinary Sciences,  
Narsingi, Hyderabad 500075**

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**Seminar**

**Ice-templated Crosslinked Colloidal Assemblies  
Recover Elastically After Large Compressive  
Strain**

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**National Chemical Laboratories, Pune**

Macroporous particulate gel monoliths, formed by crosslinking networks of surface-modified colloids during ice templating, show remarkable ability to recover elastically after large compressive strains (up to 85%). The elastic modulus of the scaffold increases linearly with temperature, indicating an entropic origin to the mechanical response. Entropic elasticity results from crosslinking under freezing conditions. In monoliths prepared by ice templating, particles are loosely tethered and exhibit large relative motions, allowing “conformational” degrees of freedom for particle strands in the network. This exceptional elasticity is observed for gels prepared from nano and microparticle dispersions of diverse materials, such as silica, polystyrene and hydroxyapatite and, by using several different crosslinking chemistries.

***Thursday, Oct 17<sup>th</sup> 2013***

***11:30 AM (Tea/Coffee at 11:15 AM)***

***Seminar Hall, TCIS***