

Supplementary Information

A Nanocomposite of Silver and Thermo-associating Polymer by Green Route: A Potential Soft-Hard Material for Controlled Drug Release

Nivika R. Gupta,^a B. L. V. Prasad,^b Chinnakonda S. Gopinath,^{c,d*} and Manohar V. Badiger^{a,d,*}

^aPolymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune -411 008, India
Fax: +91-20-2590 2612; Tel: +91-20-2590 2187

, *E-mail: mv.badiger@ncl.res.in (Corresponding Author)

^bPhysical and Materials Chemistry Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune -411 008, India.

^cCatalysis Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune 411 008, India.

Fax: +91-20-2590 2633; Tel: +91-20-2590 2043;

E-mail: cs.gopinath@ncl.res.in; Website: <http://nclwebapps.ncl.res.in/csgopinath/>

^dCenter of Excellence on Surface Science, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune -411 008, India.

1. Stability of AgNPs:

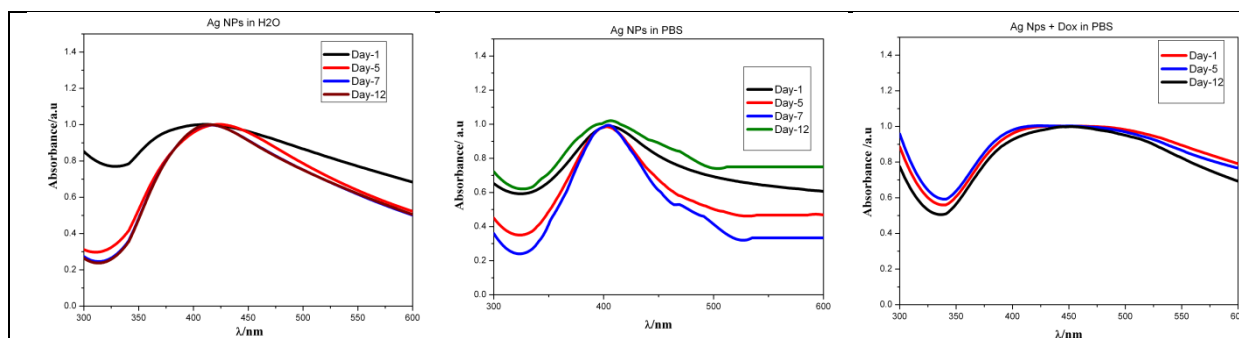


Figure S1: UV-Vis spectra of AgNPs in water, PBS and in mixture of DOX+PBS

The stability of AgNPs in the as-prepared state, in the PBS buffer, and after the drug release has been studied by UV-Vis spectroscopy. There is no noticeable change in the surface Plasmon resonance (SPR) peak position of the AgNPs which indicates that the colloidal particles are stable.

2. Cytotoxicity of Nanocomposites:

The cytotoxicity of CMG-g-PEPO polymer on NIH3T3 cells was assessed by MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay. Figure S2 shows cell viability versus incubation time with different concentrations of CMG-g-PEPO. The results in figure show a very high survival rate for the polymer leading to significantly higher viabilities, measured nearly 90%. These studies indicate that CMG-g-PEPO polymer do not show any cytotoxicity even at higher concentrations and exhibit very good biocompatibility.

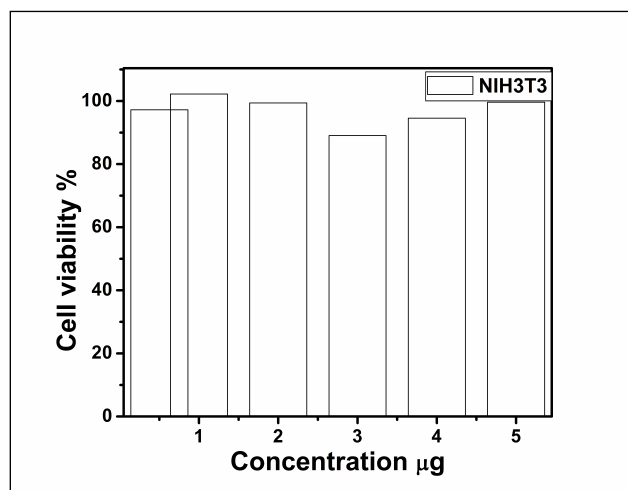
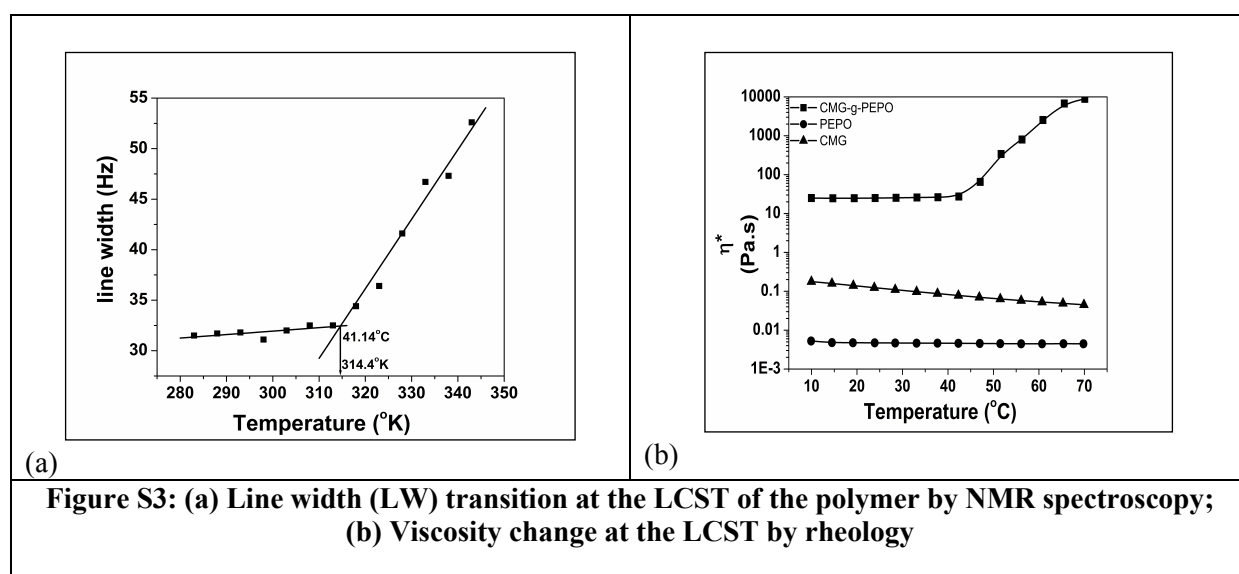


Figure S2: Cell viability for CMG-g-PEPO polymer

3. LCST of CMG-g-PEPO copolymer by NMR spectroscopy and Rheology:

Extensive studies on the rheology and NMR of CMG-g-PEPO polymer solutions were carried out. It was observed that this polymer exhibits interesting thermo-associating behavior at the LCST.



At the LCST of the polymer, the sol-gel transition takes place which is determined by **line-width vs temperature** transition in NMR spectroscopy and **η vs temperature** transition in rheology. The transition temperature is found to be between 39-41 °C which correlates well with the body temperature of 37 °C.