

# Thermoreversible Gel-Sol Behavior of Rod-Coil-Rod Peptide-Based Triblock Copolymers

*Venkata Krishna Kotharangannagari<sup>a,b,‡</sup>, Antoni Sánchez-Ferrer<sup>b,‡</sup>, Janne Ruokolainen<sup>c</sup>,  
and Raffaele Mezzenga<sup>b,\*</sup>*

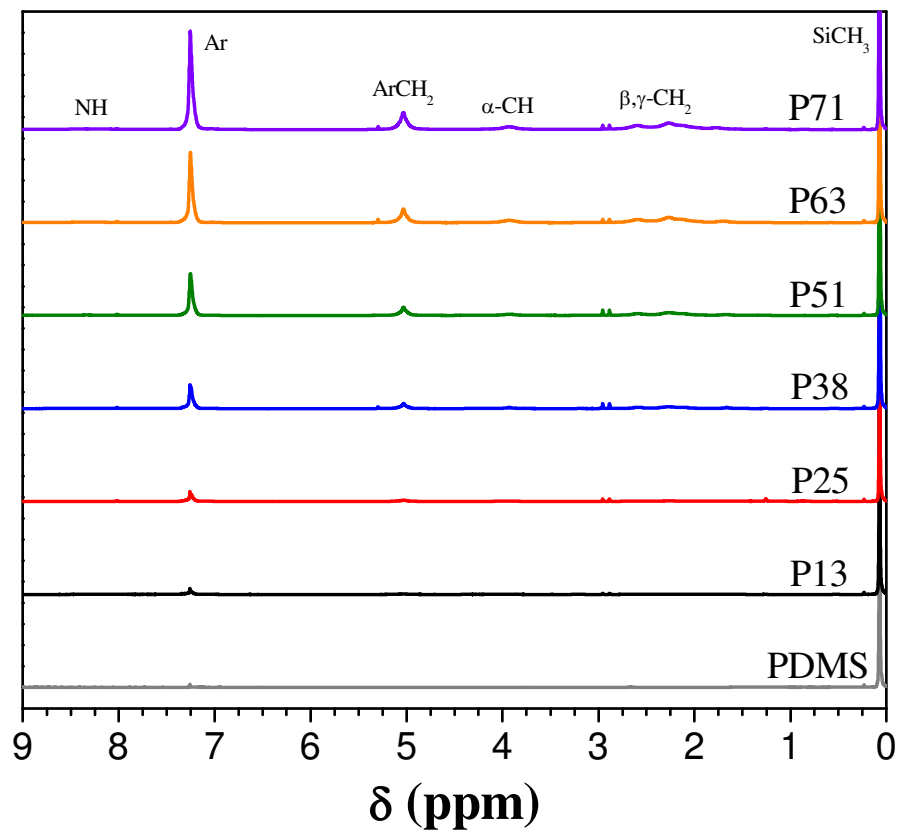
<sup>a</sup> Department of Physics and Frimat Center for Nanomaterials, University of Fribourg, Chemin du Musée 3, 1700, Fribourg, Switzerland.

<sup>b</sup> Food & Soft Materials Science, Institute of Food, Nutrition & Health, ETH Zurich, Schmelzbergstrasse 9, 8092 Zurich, Switzerland.

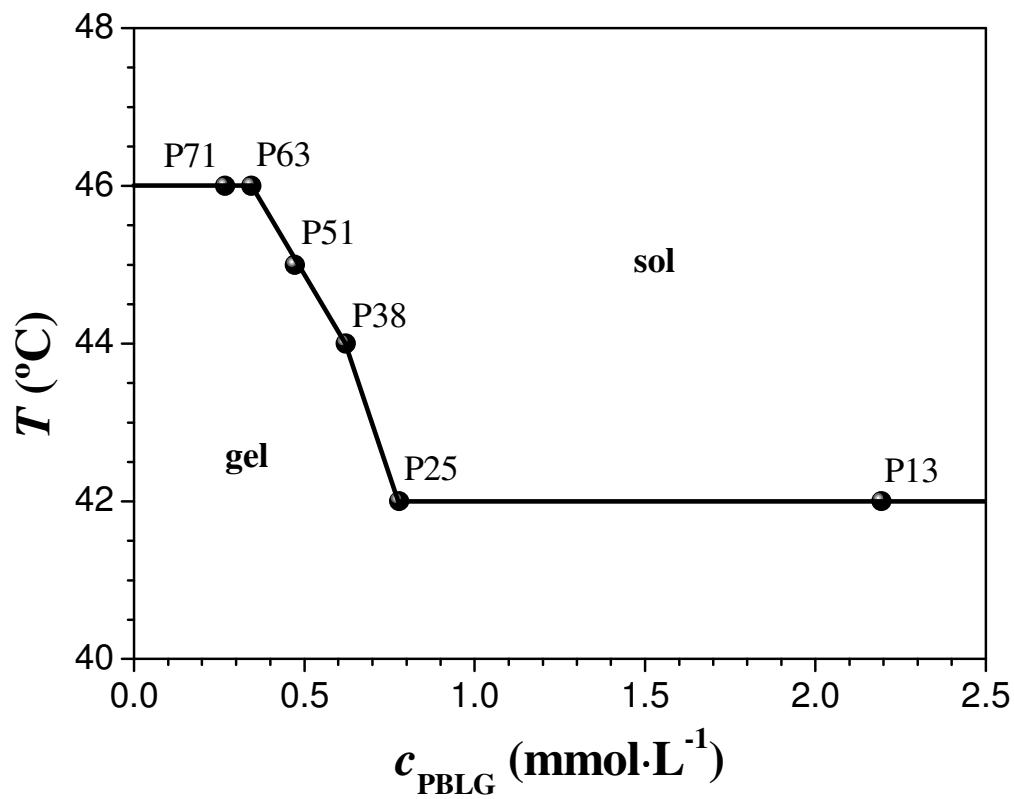
<sup>c</sup> Department of Applied Physics, AALTO University, P.O. Box 15100, 00076, Helsinki, Finland.

‡ The first two authors contributed equally to this study.

\* CORRESPONDING AUTHOR EMAIL ADDRESS ([raffaele.mezzenga@hest.ethz.ch](mailto:raffaele.mezzenga@hest.ethz.ch))

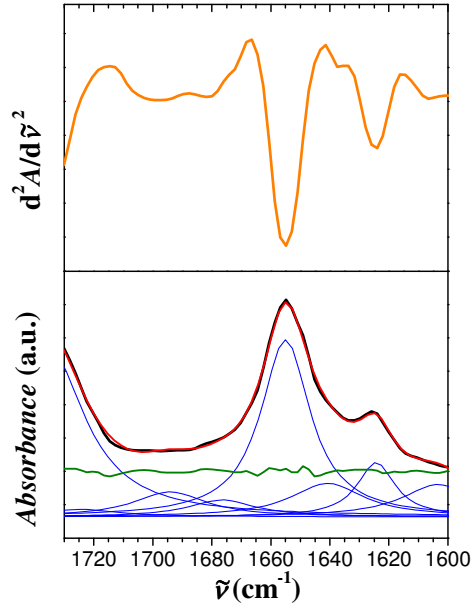


**Figure S1:** <sup>1</sup>H NMR spectra and assignment of the peaks for the six triblock copolymers and PDMS. *Note:* each spectrum is normalized respect to the SiCH<sub>3</sub> signal.

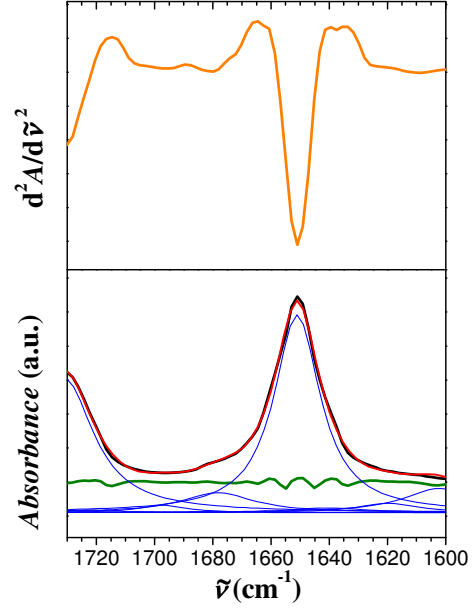


**Figure S2:** Phase diagram showing the gel-sol transition as a function of concentration and temperature for the PBLG-*b*-PDMS-*b*-PBLG triblock copolymers in toluene. *Note:* the  $c_{\text{PBLG}}$  is the molar concentration of PBLG blocks, acting as physical linkers in the gelation process.

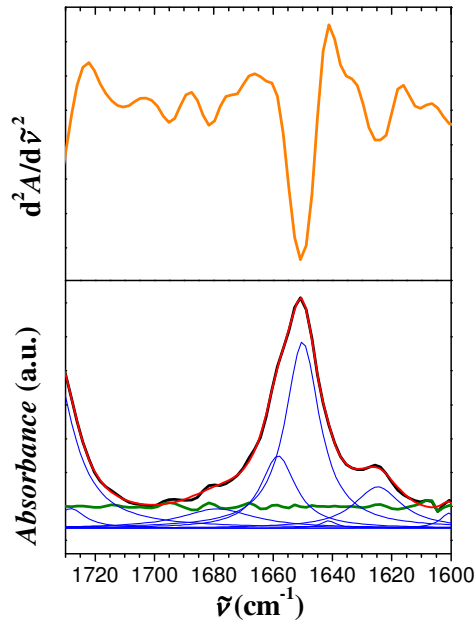
a)



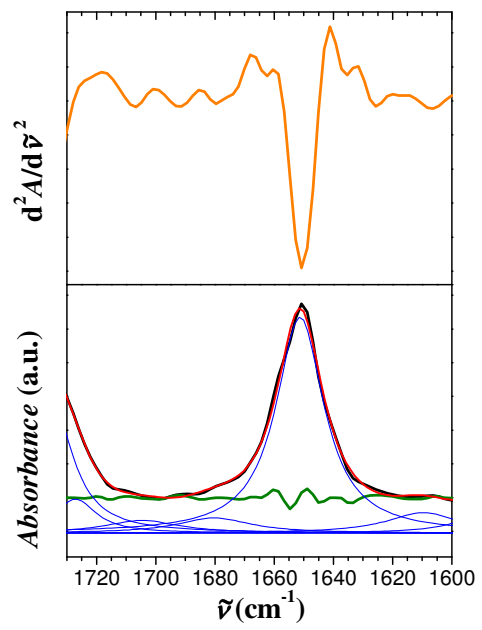
b)



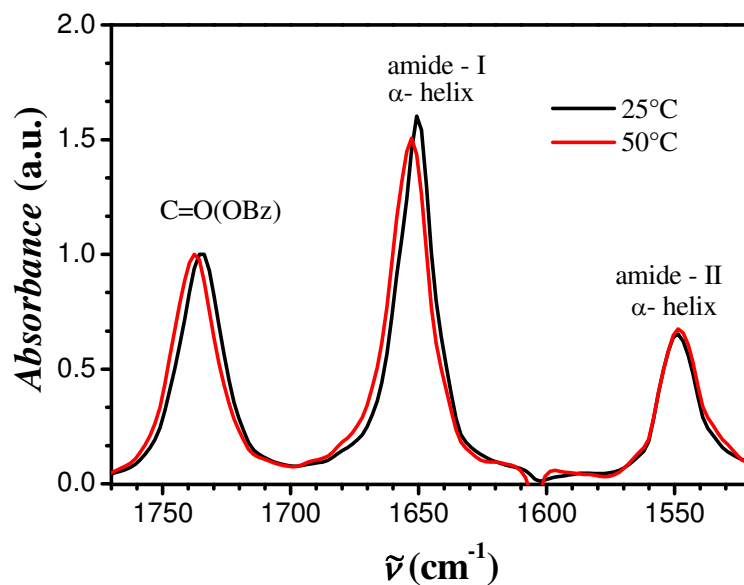
c)



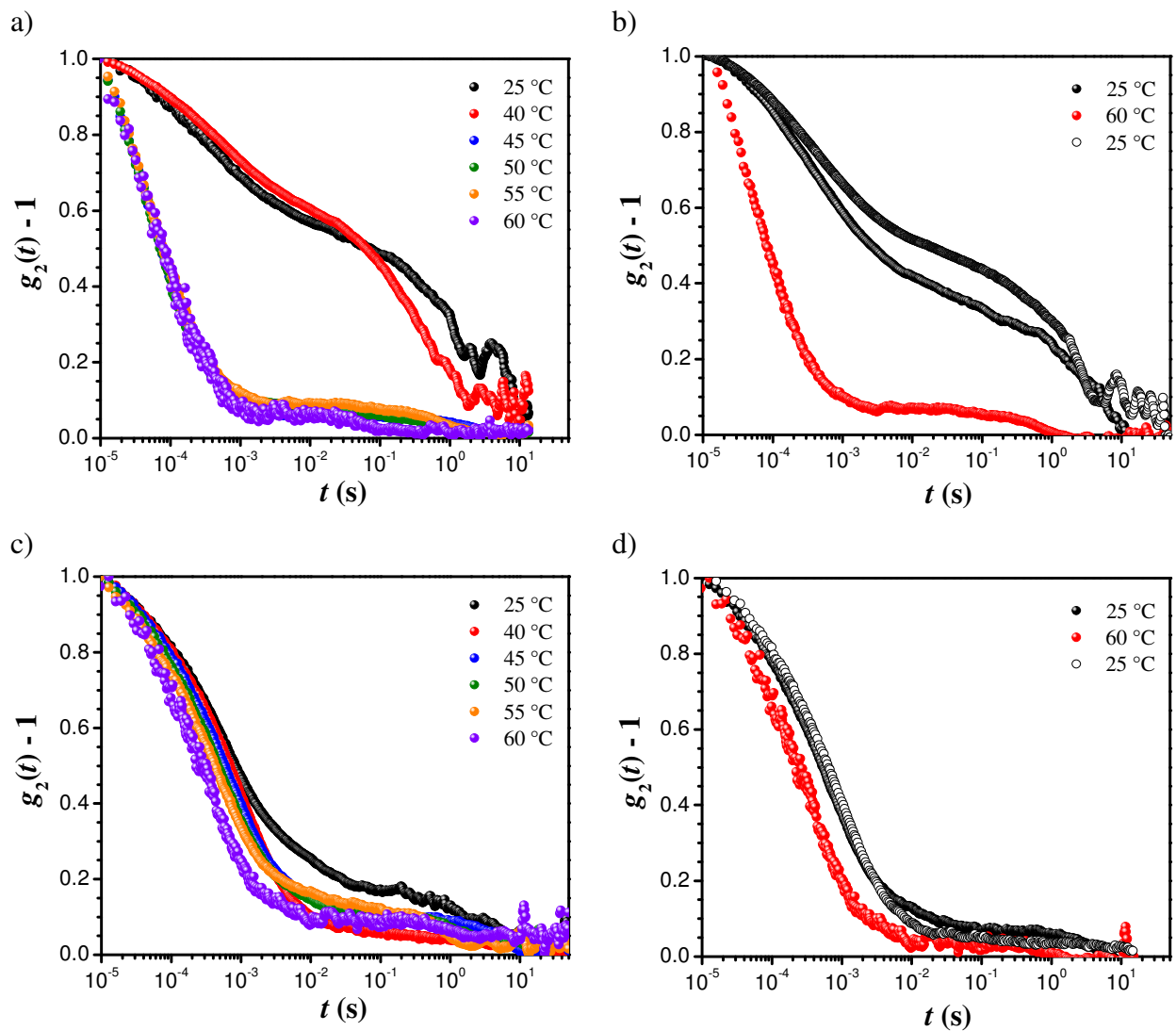
d)



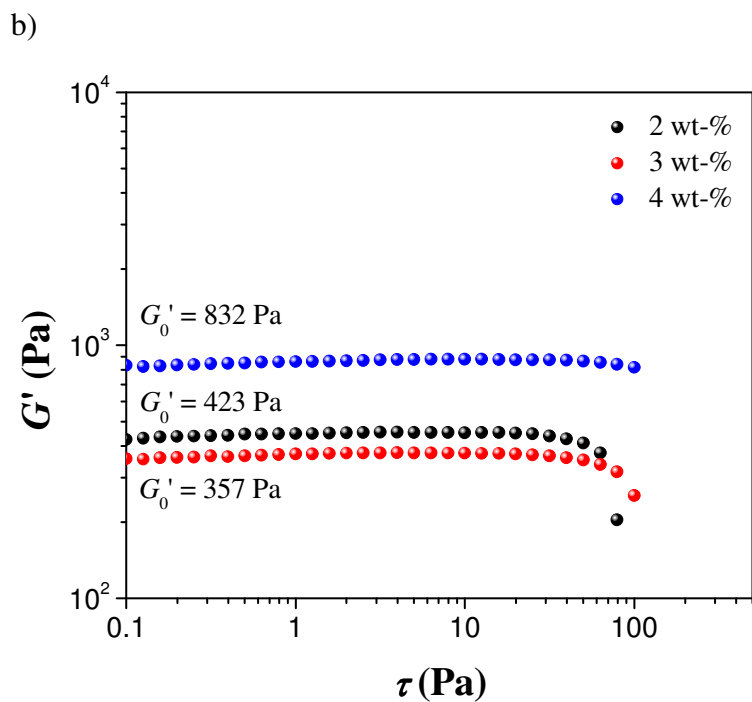
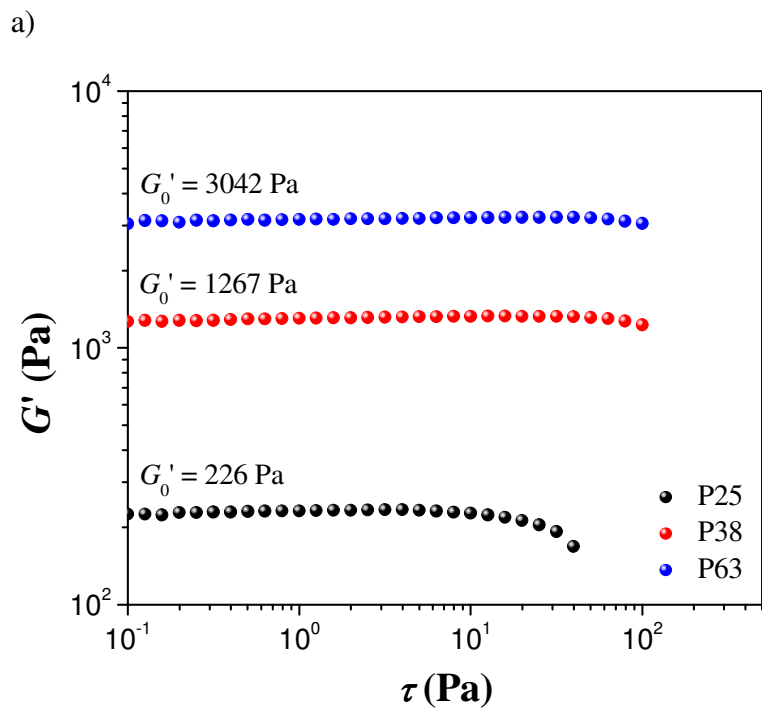
e)



**Figure S3:** FTIR spectra (black), fitting curves (red), deconvolution curves (blue), residues (green) and second derivatives (orange) for the triblock copolymer a) P25 and b) P63 in solid state, and for the triblock copolymer c) P25 and d) P63 at 2 wt-% in toluene in the gel state. e) FTIR spectra for the triblock copolymer P63 at 2 wt-% in toluene at 25 °C (gel-state) and at 50 °C (sol-state).



**Figure S4:** a) Normalized electric field cross-correlation functions at different temperatures for the sample P25 at 2 wt-% in toluene. b) Normalized electric field cross-correlation functions at 25 °C, 60 °C and back to 25 °C showing the thermoreversible behavior of the sample P25 at 2 wt-% in toluene. c) Normalized electric field cross-correlation functions at different temperatures for the sample P38 at 2 wt-% in toluene. d) Normalized electric field cross-correlation functions at 25 °C, 60 °C and back to 25 °C showing the thermoreversible behavior of the sample P38 at 2 wt-% in toluene.



**Figure S5:** Shear stress sweeps experiments, a) for the triblock copolymers P25, P38 and P63 at 2 wt-% in toluene, and b) for the triblock copolymer P38 at different concentrations in toluene.