

# **Formation and Growth of Mesoglobules across the Poly(N-isopropyl acrylamide) Coil-to-Globule Transition Revealed with Kinetic Neutron Scattering and Fast Pressure Jumps**

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Phase separation plays an important role in soft matter systems and biotechnology. Here we investigate the coil-to-globule transition of the stimuli-responsive polymer Poly(N-isopropyl acrylamide) (PNIPAM), leading to phase separation. At ambient pressure the transition is associated with the release of hydration water. In the two-phase region PNIPAM forms stable mesoglobules with their size and hydration state depending strongly on pressure. We present results from recent neutron scattering experiments in PNIPAM / D<sub>2</sub>O solutions that elucidate the formation of mesoglobules from molecularly dissolved chains and their growth kinetics.

1. B.-J. Niebuur, L. Chiappisi, F. Jung, X. Zhang, A. Schulte, and C. M. Papadakis. *ACS Macro Lett.* **7**, 1155 (2018).
2. B.J.Niebuur, W. Lohstroh, M.S.Appavou, A. Schulte, C. M. Papadakis. *Macromolecules* **52**, 1942–1954 (2019).