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【907】Phase behavior in polydisperse microgel suspensions controlled by spontaneous particle deswelling

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Crystallization is often suppressed by point defects due to larger impurity particles. Surprisingly, microgels can overcome this limitation: Large microgels can spontaneously deswell to fit into the crystal lattice of smaller but otherwise identical microgels. We find this unique reduction of polydispersity and particle deswelling to be triggered by a difference in osmotic pressure between the inside and the outside of the microgel particles that is set by counterions. We find the freezing point of polydisperse and bidisperse pNIPAM suspensions to be linked to particle deswelling. In comparison to hard, incompressible colloidal particles, this particle deswelling mechanism fundamentally changes the role of polydispersity in microgel suspensions.

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