

Abstract Submitted
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Slow dynamics, ageing and crystallization of a multiarm star glass: New routes to equilibrium? EMMANUEL STIAKAKIS, FORTH-IESL, Heraklion, Crete, Greece and IFF, Weiche Materie, FZ-Jülich, Germany, AGNIESZKA WILK, JOACHIM KOHLBRECHER, ETH Zurich & Paul Scherrer Institut, Villigen PSI, Switzerland, DIMITRIS VLASSOPOULOS, GEORGE PETEKIDIS, FORTH-IESL, Heraklion, Crete, Greece — Multiarm star polymers are model systems with tunable intermediate colloid to polymer-like character, exhibiting rich phase behaviour, internal relaxations and flow properties [1]. An important puzzle for several years has been the lack of clear experimental proof of crystalline states despite strong theoretical predictions. We present unambiguous evidence, via multispeckle dynamic light scattering (MSDLS) and small angle neutron scattering (SANS) for such crystallization in a solvent of intermediate quality. An unexpected speed-up of the short-time star diffusion observed in MSDLS was attributed by SANS to crystallization, via ageing, of the multiarm star glass. This delayed glass to crystal transition establishes a novel pathway for star crystallization that might be generic in colloidal glasses [2].

[1] Likos C.N., Phys. Rep., 348, 267, (2001).

[2] E. Zaccarelli et al., Phys Rev. Lett., 103, 135704, (2009).

George Petekidis
Foundation for Research & Technology–Hellas, IESL, Heraklion

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