**Description of Additional Supplementary Files**

Supplementary Movie 1: Animation of the simulated colloidal gelation

Animation of the gelation process for a simulated colloidal system at volume fraction $\phi = 0.16$. Shown is the evolution over 300 time units following an instantaneous change in the particle-particle attraction strength from $1k_B T$ to $4k_B T$. The colour scale represents the particle-particle coordination: black particles have 0 neighbours within the attractive range of the potential; yellow ones have 12 neighbours. Low coordination particles at cluster periphery are seen to detach and re-attach frequently, while high-coordination particles at the centre are much less mobile.