



FRONTIERS IN MICRORHEOLOGY



Title(2): Gelation of carbon nanotube networks

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Abstract (2): We report measurements of the gelation of a rigid rod network comprised of a semidilute dispersion of surfactant stabilized carbon nanotubes. Using one- and two-point microrheology, we follow the gelation of the suspension from an initial solution of unbonded tubes to a percolated gel network with a finite yield stress. Near the gel point, we find power law scaling of the shear modulus as a function of gelation time and a collapse of the moduli under time-cure superposition. Our microrheology derived results, combined with small angle neutron scattering, linear and non-linear macrorheological measurements, and simulations of network architecture, implicate inter-tube bonding, rather than intra-tube flexural rigidity, as the dominant contribution to elasticity in these networks.



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