

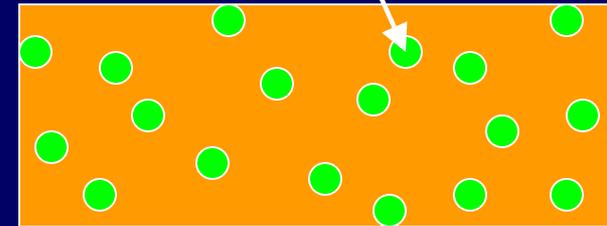
Role of Polymer architecture and tacticity on mechanical and flow behavior

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➤ Experiments: Rheo-FTIR spectroscopy, rheo-optics, X-ray, others

➤ When **branched density is high**, polymers behave as **soft-colloidal particles**. In 'miscible' blends, the branched polymer may be 'molecularly dispersed', even at high weight fractions¹, acting as a well-dispersed nanoparticle filler.

**Branched polymer
in miscible blends**



➤ In **semi-syndiotactic polypropylenes**, there is a deformation-induced, tacticity-dependent, structural transition, that makes these materials **highly elastic**² (3M collaboration)

➤ Teaching: Collaborative research projects for minorities, Case-study-based teaching

¹ Kharchenko SB, Kannan, RM, *Macromolecules*, 2003, 36(2), 399-415

² Sevegney M, et al. (Kannan RM-PI), *Macromolecules*, 2003,36(17), 6472