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Flow responses of semi-dilute aqueous solutions of Polyethylene Oxide seeded with silica nanoparticles DANIEL JOSEPH, HAOPING YANG, RUNYUAN BAI, JING WANG, University of Minnesota — The Polyethylene Oxide (PEO) solutions seeded with nanoparticles give rise to greatly enhanced flow responses in tubeless siphons, open siphons, rod climbing and die swell which are described here. We focus on the exceptional properties of these solutions in some of the well known flows which are used to demonstrate the dramatic differences in flow response of Newtonian and highly viscoelastic fluids. Here, we go one step further, and use these prototypical flows to demonstrate the dramatic differences in flow response of semi-dilute PEO solutions and these same solutions seeded with silica nanoparticles in modest concentrations of no more than 3% by weight.

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