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Models of the viscoelasticity of polymer nanocomposites CATALIN PICU, ALIREZA SARVESTANI, ABHIK RAKSHIT, Rensselaer Polytechnic Institute — A family of models is developed to represent the viscoelasticity of polymers filled with nanoparticles. This includes discrete modeling and simulation, as well as rheological molecular modeling. Discrete coarse-grained models are used at various spatial and temporal scales to inform the rheological models as well as to validate their output. The main objective is to capture the mechanisms relevant for the chain dynamics such as chain-filler interactions, entanglements, tube fluctuations and constraint release. These are incorporated in the constitutive model whose predictions are then compared with relevant published experimental data.

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