

Abstract Submitted
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Phase separation dynamics in polymer blends close to T_g : aging and rejuvenating GREGOIRE JULIEN, CNRS/Rhodia UMR 5268 — We extend the Percolation of Free Volume Distribution (PFVD) model developed by Long and co-workers to deal with polymer blends dynamics close to the glass transition. The dynamical model incorporates an extension of the Flory Huggins model to the case of compressible blends for calculating the driving forces. Spatial dynamics follows then from an Onsager like description. The model is solved on a 2D lattice corresponding to spatial scales of about a few tens to 100 nm and a resolution corresponding to the scale of dynamical heterogeneities, allowing to study phase separation close to T_g . We study also the reverse process, after the temperature is increased again in the totally miscible range. We observe a temporal asymmetry between the aging and the rejuvenation dynamics: the slow domains melt much faster than the elapsed time required to built them during the separation process and total miscibility is recovered after a much shorter time.

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