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Distribution of relaxation times in miscible polymer blends close to the glass transition PAUL SOTTA, GARETH ROYSTON, DIDIER R. LONG, CNRS — It is known that the dynamics in molecular and polymeric glass formers become strongly heterogeneous as they approach the glass transition. Here we present data recently acquired in non-polar, dynamically asymmetric, miscible blends of poly(alpha-methylstyrene) / poly(cyclohexylmethacrylate) and in blends of the molecular liquids glyceryltriacetate / toluene. The various sources of dynamical heterogeneities are discussed. We show that the Long-Lequeux model (Long and Lequeux, EPJ E 2001, 4, 371), based on density fluctuations, describes quantitatively the broadening of the relaxation time distributions on the low frequency side in the pure components as temperature comes close to Tg. The model has been extended in order to include both the concentration fluctuations in blends and the high frequency broadening. The extended model provides a quantitative description of the observed broadening of the relaxation time distributions on the whole frequency range.

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