

Isomerization-induced surface relief gratings formation: A comparison between the probe and the matrix dynamics

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R�sum� en anglais	<p>We report molecular dynamics simulations of the effect of the photoisomerization of probe molecules on the nonequilibrium dynamics of a bulk amorphous matrix. Is it the matrix or the probe that drives the dynamics in SRG formation? In the first picture, the probe isomerization induces the motion of the probe inside the matrix. The motion of the probe then induces molecular motions inside the matrix. In the second picture, the probe isomerization induces a modification of the matrix diffusion mechanism. The diffusion of the matrix then induces the motion of the embedded probe. To answer this question, we compare the motion of the probe molecules and the motion of the matrix molecules in various thermodynamic conditions. We show that when the isomerization is switched on, the matrix molecules surrounding the probe move faster than the probe. Around the probe, the structural relaxation time of the matrix molecules is shorter than the probe relaxation time and the diffusion of the matrix molecules is larger than the probe diffusion. These results show that the matrix motions drive the dynamics.</p>
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Liens

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