How does the motion of the surrounding molecules depend on the shape of a folding molecular motor?

Titre	How does the motion of the surrounding molecules depend on the shape of a folding molecular motor?
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Résumé en anglais	Azobenzene based molecules have the property of isomerizing when illuminated. In relation with that photoisomerization property, azobenzene containing materials are the subject of unexplained massive mass transport. In this work we use an idealised rectangular chromophore model to study the dependence of the isomerization induced transport on the chromophore's dimensions. Our results show the presence of a motor arm length threshold for induced transport, which corresponds to the host molecule's size. Above the threshold, the diffusive motions increase proportionally to the chromophore's length. Intriguingly, we find only a very small chromophore width dependence of the induced diffusive motions. Our very simplified motor reproduces relatively well the behavior observed using the real DR1 motor molecule, suggesting that the complex closing procedure and the detailed shape of the motor are not necessary to induce the molecular motions.
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