



Electrical-Driven Motility and Rotational Dynamics of Colloidal Platelets in Nematic Liquid Crystals

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Abstract: We study the motility and rotational dynamics of colloidal platelets in nematic liquid crystals. The motility is driven by the electric field-induced torque on the platelets. The rotational dynamics is characterized by the angular velocity and the angular diffusion coefficient. The motility and rotational dynamics are investigated by experimental measurements and theoretical simulations. The motility and rotational dynamics are found to be strongly dependent on the electric field strength and the platelet size. The motility and rotational dynamics are also affected by the nematic liquid crystal anchoring energy and the platelet orientation. The motility and rotational dynamics are characterized by the velocity autocorrelation function and the angular velocity autocorrelation function. The motility and rotational dynamics are found to be consistent with the theoretical predictions.

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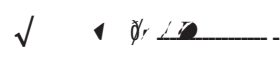
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