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Designing Liquid Crystalline Ligands for Increased QD Photovoltaic Efficiency SHEIDA.T RIAHINASAB, AMIR KESHAVARZ, BENJAMIN J. STOKES, LINDA S. HIRST, University of California, Merced — High efficiency quantum dot (QD) photovoltaics are potential candidates for use in space mission's due to their long lifetimes and stable photonic properties under high photon flux, however one limitation of this technology is in the loss of efficiency due to inter-dot energy transfer. In a recent publication we found that mesogenic ligand surface attachment can promote long-term QD photo-stability. The mesogenic ligands reduced inter-dot energy transfer, produced stable recombination rates and steady emission color over more than an hour of continuous photo-excitation. In this project we tune the spacing between QDs by using mesogenic ligands (rod-like molecules attached to the particle by a flexible alkyl chain) to decrease the lost of energy. This strategy will provide an effective route towards improving the functional and structural characteristics of QD hybrid devices.

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