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Phase Separation and Development of a Scanning Time of Flight Microscope to Study Charge Transport in Structured Organic Semiconductors SANJOY PAUL, Dept. of Physics, Kent State University, SUVAGATA TRIPATHI, Dept. of Chemistry, Kent State University, GAUTAM SINGH, Dept. of Physics, Kent State University, ROBERT TWIEG, Dept. of Chemistry, Kent State University, SATYENDRA KUMAR, BRETT ELLMAN, Dept. of Physics, Kent State University — A scanning time-of-flight microscope (STOFm) has been developed to study charge transport in liquid crystalline organic semiconductors (LCOSCs). The STOFm combines the well-known pulsed laser time-of-flight technique with simultaneous polarized light transmission measurements, both on length scales of $\sim$ 10 μm. In parallel, we have fabricated devices *via* photopolymerization and phase separation of a monomer/LCOSC mixture. The resulting structure has the LCOSC confined to small regions separated by an insulating polymer. We will discuss fabrication of these systems, as well as their characterization using the STOFm. Finally, we will show results on position-dependent charge transport in various pure LCOSC samples.

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