

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Good vibrations in molecularly doped polymers: combining impedance and Raman spectroscopy to elucidate intermolecular interactions ELIZABETH VON HAUFF, CHARUSHEELA RAMANAN, VU Amsterdam, VU AMSTERDAM TEAM — Organic offer many advantages for energy conversion, saving and storage applications. However, the poor electrical properties of organic semiconducting films, particularly low carrier mobilities, trapping and recombination phenomena, are a critical limitation for real applications. Surprisingly, carrier transport is still not well-understood in these systems, making it difficult to develop design strategies for high performance applications. There is an increasing number of reports indicating the importance of considering the effects of molecular dynamics and vibrations on the evolution of excited states in this class of materials. New experimental strategies are urgently needed to correlate dynamic relationships between molecular structure and electrical transport. I will present our current work on developing a new measurement approach which combines Raman and impedance spectroscopies. By monitoring the vibrational fingerprint of the organic semiconductor as a function of electrical perturbation, we investigate the influence of charge transport on molecular vibrations. With these results we aim to correlate molecular interactions with macroscopic electrical properties and device performance.

Elizabeth von Hauff
VU Amsterdam

Date submitted: 11 Nov 2016

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