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1D and 2D-IR spectroscopy of blended polymer-porphyrin thin films AARON MASSARI, AUDREY EIGNER, PATRICK KONOLD, University of Minnesota, Twin Cities — One and two-dimensional IR spectroscopies are used to study the static and dynamic environments that form when ruthenium(II)tetraphenylporphyrin carbonyl is blended with regioregular poly(3-hexylthiophene). The 1D-IR spectra of the Ru-bound CO symmetric stretch indicate the development of several inhomogeneously broadened microenvironments as the concentration of porphyrin is increased. Transmission electron microscopy is used to characterize the blended films, which show evidence of phase-segregation. By correlating the degree of separation with the relative proportions of each component of the 1D-IR spectrum, we identify the IR spectra corresponding to the free and aggregated porphyrin-CO stretches. 2D-IR vibrational echo spectroscopy is then used to measure the ultrafast dynamics that are present in the polymer and porphyrin phases.

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