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Sensitizing charge carrier generation in a conjugated polymer using a C70-encapsulated covalent organic polyhedron
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This presentation will report on the photophysics of a covalent organic polyhedron molecule (COP-5) containing two porphyrin molecules in the cage structure and with an encapsulated C70 molecule bound in its core. The photo-induced electron transfer processes in this structure create anomalously long-lived charge-transfer states that also respond to the dielectric constant of the solvent in an unconventional fashion. Preliminary results on using this complex to sensitize the production of long-lived charge carriers in a conjugated polymer will also be reported, where the carrier yields and kinetics are tracked using time-resolved microwave conductivity. The purpose of this work is to gain a better understanding of the nature of charge transfer (CT) and charge-separated (CS) states in the production of carriers in conjugated polymers blended with fullerenes.