



Invited Speaker

Inter-molecular charge-transfer states for organic opto-electronics

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Abstract:

Charge transfer (CT) states at the interface between electron-donating and electron-accepting (A) materials in organic thin films are characterized by absorption and emission bands within the optical gap of the interfacing materials.^[1] Depending on the used donor and acceptor materials, CT states can be very emissive, and/or generate free carriers at high yield.^[2] The former can result in rather efficient organic light emitting diodes (OLED), via thermally activated delayed fluorescence, while the latter property is exploited in organic photovoltaic (OPV) devices. In this talk, I will discuss the fundamental properties of CT states and link them to device performance. Furthermore, a new device concept will be introduced, using optical cavity resonance effect enabling narrow-band absorption enhancement,^[3] as reduced energy losses in OPV devices.^[4]

References:

- [1] *Annual review of physical chemistry*, 2016, **67**: 113-133.
- [2] *Nature Materials*, 2019, **18**: 459-464.
- [3] *Advanced Materials*, 2017, **29**: 1702184.
- [4] *Nature Communications*, 2019, **10**: 3706.