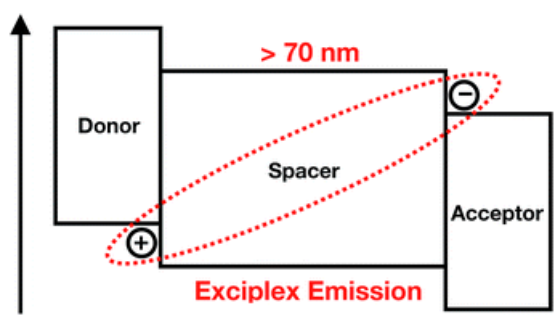


세미나 초록

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발표 주제	Long-Range Exciplex Emissions Enabled by Spatially Distant Donor–Acceptor Pairs
발표 내용	<p>Intermolecular electron–hole coupling in organic semiconductors is a fundamental process governing the performance of organic light-emitting diodes (OLEDs) and organic photovoltaics (OPVs), typically restricted to nanometer-scale separations. Here, we report the emergence of exciplex emission mediated by remarkably long-range donor–acceptor interactions, persisting even when the two layers are separated by a ~70 nm spacer. In multilayer structures composed of donor/spacer (~70 nm)/acceptor, we observe a pronounced low-energy emission band that cannot be explained by the intrinsic photoluminescence of the donor, spacer, or acceptor. Instead, this feature aligns well with the energy difference between the donor HOMO and the acceptor LUMO, providing strong evidence for exciplex formation. The exciplex origin is further corroborated by delayed components in transient photoluminescence (PL) and electroluminescence (EL) decay, along with pronounced oxygen sensitivity leading to quenching of the low-energy emission.</p>  <p>The diagram illustrates the energy levels of a multilayer structure consisting of a Donor layer, a Spacer layer, and an Acceptor layer. The Donor layer is on the left, the Spacer layer is in the middle, and the Acceptor layer is on the right. The Donor layer has a positive charge (+) and the Acceptor layer has a negative charge (-). A red dotted line indicates the interaction between the Donor HOMO and the Acceptor LUMO, labeled 'Exciplex Emission'. The distance between the Donor and Acceptor layers is labeled '> 70 nm'.</p>