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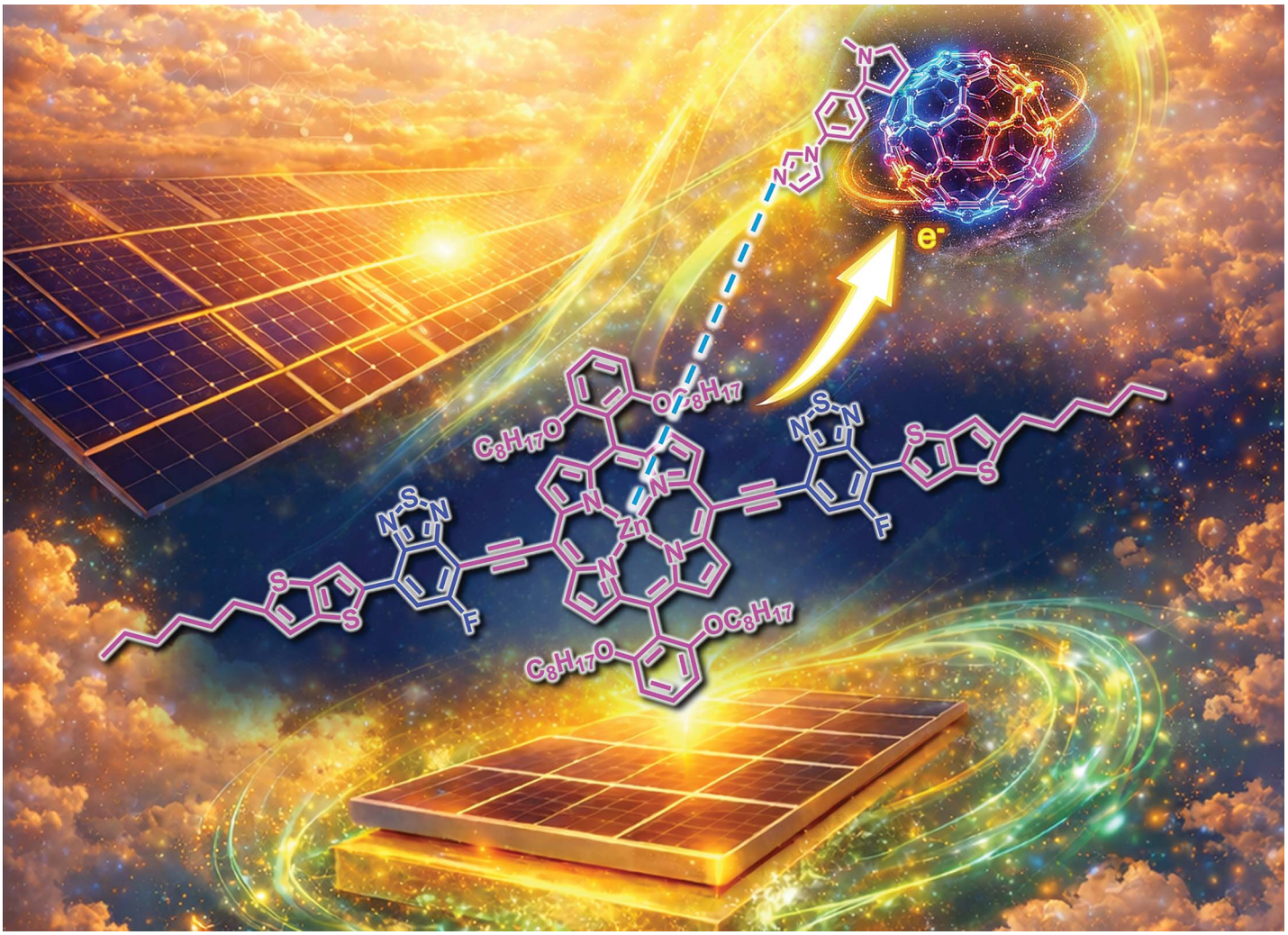

Showcasing research from Prof. Giribabu from CSIR-Indian Institute of Chemical Technology, Hyderabad, India, and Prof. Francis D'Souza from the University of North Texas, Denton, TX, USA.

Porphyrin–thieno[3,2-*b*]thiophene hole-transport materials enabling the production of long-lived radical ion pairs and high-performance perovskite solar cells

The design of a new porphyrin-based high-quality hole transporting material (HTM) using the Donor-π-Donor concept, in which donor 6-fluoro-benzothiadiazole (FBDT) and hexylthieno[3,2-*b*]thiophene (TT) groups are tethered to an ethynyl linkage to a porphyrin π-spacer. Optical, redox, and theoretical studies indicate that the HOMO energy levels of $MAPbI_3$ perovskite are aligned with its valence band, and the devices demonstrated 16.62% power conversion efficiency under AM 1.5G conditions. The same molecular system, which was axially coordinated to C_{60}, was used to generate a long-lived charge-separated species with a lifetime of 1.56 ns upon irradiation at different wavelengths, revealing charge stabilization.

As featured in:

See L. Giribabu, Surya Prakash Singh, Francis D'Souza *et al.*, *EES Sol.*, 2026, **2**, 351.

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