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Tunable Broadband Printed Carbon Transparent Conductor YUE XU, JIAYU WAN, Univ of Maryland-College Park — Transparent conductors have been widely applied in solar cells, transparent smart skins, and sensing/imaging antennas, etc. Carbon-based transparent conductor has attracted great attention for its low cost and broad range transparency. Ion intercalation has been known to highly dope graphitic materials, thereby tuning materials' optoelectronic properties. For the first time, we successfully tune the optical transmittance of a reduced graphene oxide (RGO)/CNT network from mid-IR range to visible range by means of Li-ion intercalation/deintercalation. We also observed a simultaneous increase of the electrical conductivity with the Li-ion intercalation. This printed carbon hybrid thin film was prepared through all solution processes and was easily scalable. This study demonstrates the possibility of using ion intercalation for low cost, tunable broadband transparent conductors.

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