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1-pyrenecarboxylic acid Functionalization of Graphene: Effect on Capacitive Energy Storage SUJOY GHOSH, RAKESH SHAH, Department of Physics, Southern Illinois University Carbondale, IL-62901, XIAOHONG AN, Department of Physics, Northeastern University, Boston, MA 02115, DINESH RAWAT, Department of Physics, Southern Illinois University Carbondale, IL-62901, SWASTIK KAR, Department of Physics, Northeastern University, Boston, MA 02115, SAIKAT TALAPATRA, Department of Physics, Southern Illinois University Carbondale, IL-62901, DEPARTMENT OF PHYSICS, SOUTHERN ILLINOIS UNIVERSITY CARBONDALE, IL-62901 COLLABORATION, DEPARTMENT OF PHYSICS, NORTHEASTERN UNIVERSITY, BOSTON, MA 02115 COLLABORATION — We will present a comparison of Electrolytic Double Layer Capacitance (EDLC) performance of membrane electrodes fabricated using pure and 1-pyrenecarboxylic acid (PCA)-functionalized graphene flakes. A significant increase in specific capacitance as well as energy and power density values in PCA graphene electrodes indicates that surface functionalization (that affects the hydrophilicity) of graphene-based materials is crucial for improving capacitive energy storage ability of these materials.

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