

MAE Seminar SERIES

THURSDAY,
MAY 12
3:30 PM

ZOOM INFORMATION

MEETING ID:

976 2525 0508

PASSWORD: MAE503



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DIELECTRIC BEHAVIOR OF ELECTRONIC CONDUCTORS AND THE ASSOCIATED NEW AVENUE OF ELECTRICAL ENERGY GENERATION

ABSTRACT

This seminar pertains to a neglected aspect of the electrical behavior of conductors (metals and carbons). This behavior concerns the presence of inherent positive and negative electrical poles (i.e., polarization) in a conductor. The polarization embodies electrical energy and stems from the interaction of a small fraction of the mobile electrons with the atoms. Upon short-circuiting it discharges, as in capacitor discharge. Upon subsequent open-circuiting, it charges back, i.e., self-charge, due to the thermodynamic stability of the charged state. The voltage and power increases with the size of the conductor. This technology potentially enables large structures such as steel structures to produce electricity without the need for energy storage, i.e., a new untapped form of energy.

BIO SKETCH

Professor Chung of the University at Buffalo received her Ph.D. degree in Materials Science from MIT and her B.S. degree from Caltech. She is ranked by the 2021 Stanford University study (based on citations) to be No. 1 in the world in the field of Building and Construction. She is a pioneer and international leader in research on multifunctional structural materials. She has authored or coauthored >600 archival journal papers, and 10 books, with ~40,000 citations (Google Scholar). Chung is Fellow of ASM International and American Carbon Society. She received the Pettinos Award (an international research award) from the American Carbon Society and an Honorary Doctorate Degree from University of Alicante, Spain.



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