



University at Buffalo

Department of Mechanical
and Aerospace Engineering

School of Engineering and Applied Sciences

Unprecedentedly Investigated Dielectric Behavior of Electrically Conductive Materials and its Relevance to Electrochemical Devices and Structural Self-sensing

Professor Deborah D.L. Chung

*Department of Mechanical and Aerospace Engineering
The State University of New York, Buffalo, NY 14260-4400 U.S.A.*

Abstract

The electrical behavior of a material pertains to the conduction behavior (related to the electrical conductivity, which dictates the electrical resistance) and the dielectric behavior (related to the electric permittivity, which dictates the capacitance). Concerning electrically conductive materials, much attention has been given to the former, but little attention has been given to the latter, though both are relevant to applications, which pertain to electrochemical devices (batteries, supercapacitors, etc.) and structural self-sensing (a structural material sensing itself without sensors). The conductive materials studied include carbons (important for electrochemical electrodes), metals, and composites.

Bio Sketch



Chung received her Ph.D. degree in Materials Science from Massachusetts Institute of Technology (under the tutelage of M.S. Dresselhaus) and her B.S. degree from California Institute of Technology. She is Professor in University at Buffalo. She has authored or co-authored over 560 archival international journal papers, in addition to 8 books, which include *Carbon Composites* (Elsevier, 2016), *Composite Materials* (2nd Ed., 2010, Springer) and *Functional Materials* (2010, World Sci.). Her *Web of Science* h-factor is 61, with citations reaching 1400 per year. She is the inventor of smart concrete and is an international leader in the fields of multifunctional structural materials, electromagnetic interference (EMI) shielding materials, thermal interface materials and carbon materials. Chung is Fellow of ASM International and American Carbon Society. The honors that she has received include the Pettinos Award from the American Carbon Society, the Top Reviewer Award from the Carbon journal, the Niagara Mohawk Power Corporation Endowed Chair Professorship and the Chancellor's Award for Excellence in Scholarship from the State University of New York, the Honorary Doctorate degree from University of Alicante, Spain, and the Hardy Gold Medal from the American Institute of Mining, Metallurgical, and Petroleum Engineers.

Thursday, Oct. 12, 2017

3:30 - 4:50 PM O'Brian 112

