C.C.MEI DISTINGUISHED SPEAKER SERIES 2022-23

Civil and Environmental Engineering

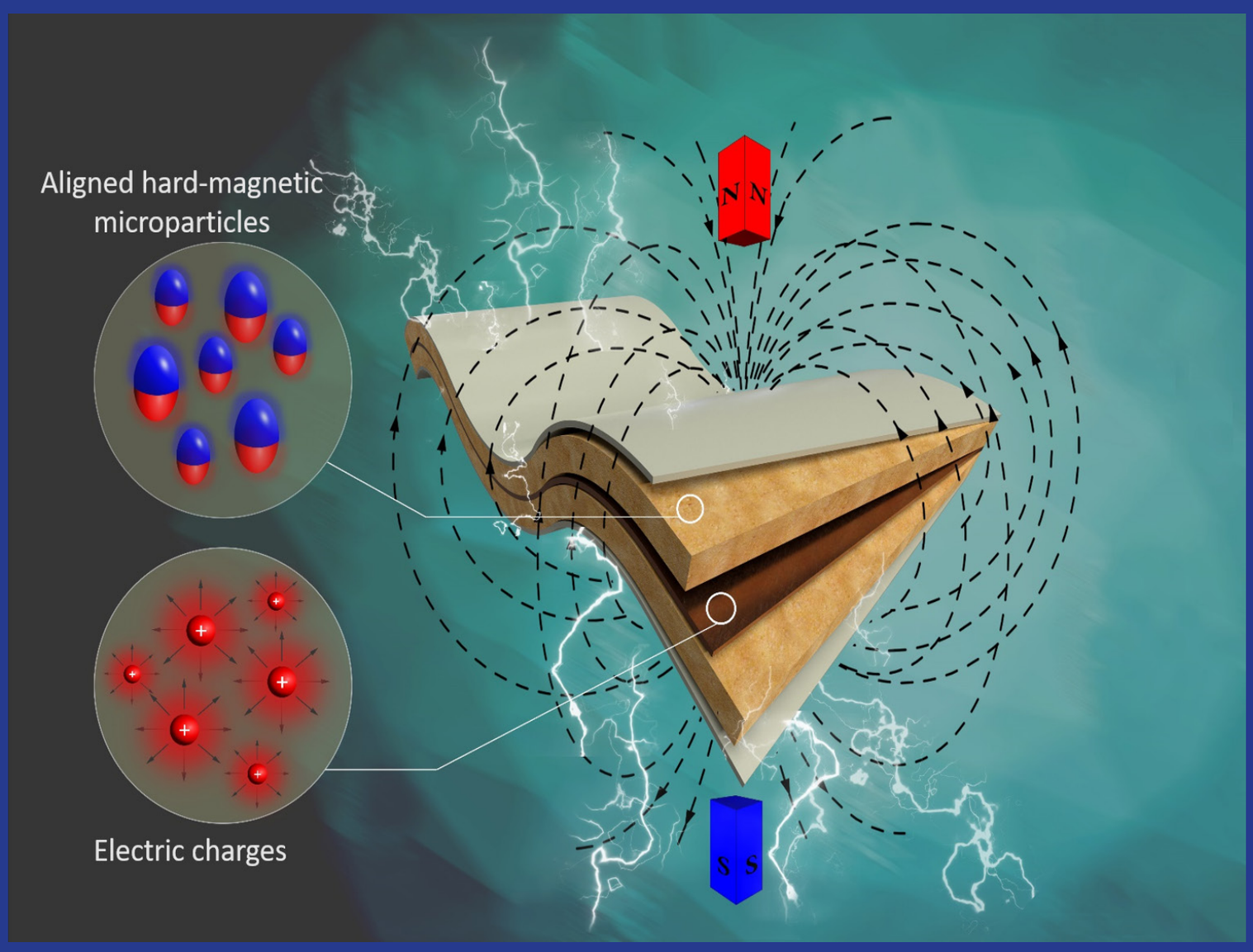
Prof. Pradeep Sharma

UNIVERSITY OF HOUSTON

MD ANDERSON CHAIR PROFESSOR
DEPARTMENT CHAIR OF MECHANICAL ENGINEERING

Flexoelectricity & Electrets

The ability of certain materials to convert electrical stimuli into mechanical deformation, and vice versa, is a prized property. Not surprisingly, applications of such so-called piezo-electric materials are broad-ranging from energy harvesting to self-powered sensors. In this presentation, I will highlight a relatively understudied electromechanical coupling called flexoelectricity that appears to have implications in topics ranging from biophysics to the design of next-generation soft multifunctional materials. Specifically, I will argue, through several examples that these developments provide a paradigm for applications such as the possibility of creating “apparently piezoelectric” materials without piezoelectric materials - e.g. graphene, emergence of “giant” piezoelectricity at the nanoscale, soft magnetoelectric materials, and insights into the mechanisms underpinning magnetoreception in certain animals.



February 27

Refreshments: 4:00pm

Lecture: 4:15pm

Building: 3-270

Faculty Hosts:

Tal Cohen

Markus Buelher

MASSACHUSETTS INSTITUTE OF TECHNOLOGY