

The Department of Bioengineering

is please to invite you to our next Bioengineering Seminar Series event featuring:

Dr. Gary Wnek, PhD,
Case Western Reserve University

“Uncommon Observations with Common Polymers: Implications and Applications”



Friday, March 1st, 2024
10:45AM-11:45AM
HST/HE 101

Please contact the bioengineering graduate coordinator, Rebekah Short (rjs323@lehigh.edu), with any questions or comments.

**Dr. Gary Wnek, PhD,
Case Western Reserve University**

“Uncommon Observations with Common Polymers: Implications and Applications”

ABSTRACT:

The field of polymeric materials recently celebrated its centenary anniversary, and yet there is much to learn and do with many simple and well-studied polymers. Three of the speaker's favorites are poly(vinyl alcohol), butyl rubber, and lightly-crosslinked poly(acrylic acid) in its ionized (primarily sodium salt) form.

Toward that end, three vignettes will be presented and discussed:

1. The use of highly hydrolyzed poly(vinyl alcohol) for the promotion of cell spheroid cultures, attributable to low degrees of protein adsorption and thus encouraging cell-cell adhesion;
2. Unusual but predictable tension-and-release properties of simple bilayers of a thermoplastic elastomer and butyl rubber which necessarily have different viscoelastic responses, namely vulcanized rubber exhibiting classical neo-Hookean behavior (for example, styrenic thermoplastic elastomers), with the unvulcanized counterpart, such as butyl rubber, being dominated by viscous and thus permanent deformation;
3. Poly(acrylic acid)-based gels that, in polyanionic form, are of interest as models of cellular cytoskeleton and the ectoplasm of nerve, and which can exhibit electrical potential similar in sign and magnitude to living cells.

BIO:

Gary Wnek is the Joseph F. Toot, Jr., Professor of Engineering and Professor and Chair of Macromolecular Science and Engineering at Case Western Reserve University.

His research interests include fibrous polymers and gels for applications in drug delivery and regenerative medicine, synthetic macromolecular constructs that mimic physiological functions, processing of polymer multi-layer and polymer fiber/matrix composites, and flammability mitigation of common polymers.

He has authored or co-authored over 210 publications and holds 37 US patents. Gary earned a Ph.D. in Polymer Science and Engineering from the University of Massachusetts, Amherst, and a B.S. in Chemical Engineering from Worcester Polytechnic Institute.

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