DR. EROL SANCAKTAR

Professor of Polymer Engineering and Mechanical Engineering

Adhesives, Adhesion, Composites, Nanotechnology, Design

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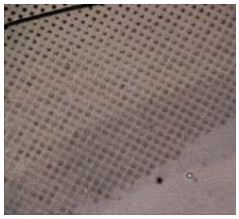
Biography: Erol Sancaktar received his Ph.D. (Eng'g. Mechanics) and M.S. (Mech. Eng'g.) degrees at Virginia Tech. He is currently serving in Editorial Boards of: J. Adhesion, Reviews of Adhesion and Adhesives, Current Nanoscience, Int. J. Polymer Science, Recent Patents in Chemical Eng. and Nanoscience & Nanotechnology-ASIA. Dr. Sancaktar organized 29 Conferences/Symposia. He was a Mechanical and Aeronautical Engineering faculty member at Clarkson University during 1978 to 1996 before joining UA in 1996. Dr. Sancaktar has had 53 graduate students (12 Ph.D.'s), as well as having 24 foreign scholars visit his laboratories for 3 – 12 months visits. He edited/co-edited 24 books, published 97 refereed journal articles, 30 articles in books, including 4 chapters in handbooks. He has delivered over 239 technical presentations. Dr. Sancaktar has 3 patents.

Awards/Accomplishments:

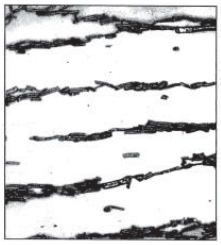
- Fellow of the American Society of Mechanical Engineers (ASME), (1997)
- Chair of ASME National Technical Committee on Reliability Stress Analysis, and Failure Prevention (1997-2008)
- Associate Editor, J. Mechanical Design (ASME, 1995-98, 2003-2006)
- Associate Editor, J. Medical Devices (ASME, 2006-2015)
- 52 different grants, totaling over $3M, with 7 different NSF awards (over 17 years)

Research Interests:

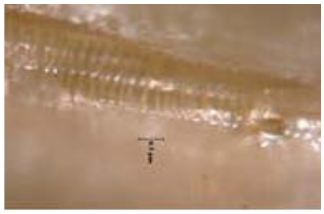
Mechanical behavior of adhesives, polymers, composites; materials characterization; viscoelasticity; fracture mechanics; experimental and theoretical solid mechanics; design and manufacture with novel materials, novel processes; excimer laser applications in polymers; electrically conductive adhesives and polymers; nanoprocessing, nanocomposites and nanodevices.



Cell Growth on Polymer Film Perforated by Excimer Laser



Anisotropic Alignment of 160 μm long, 20 μm D Ni Filaments in Epoxy under Magnetic Field



Surface Features Created on Polyester Strand Using Excimer Laser

Application Focus:

Nanotechnology – Nanocomposites: design, process and characterization; Modification and use of electrospun nanofibers; Self-assembly in block copolymers and stretched polymer films.

Adhesives, Adhesion - Optimization of adhesion and adhesive joint geometries, surface topographies; Adhesive characterization; Design and characterization of adhesive composites, including electrically conductive adhesives.

Composites– Nanocomposites; Composite applications in medical fields and in electronics; Design of/with novel materials.

Excimer Laser Applications - Use of excimer laser in composite material, adhesion, polymer property, and process evaluation, adhesion enhancement, polymer welding, micromachining applications and nanolithography.

Unique Capabilities:

Lambda Physik Excimer LPX 240i Pulse Laser with 157 to 351 nm wavelength range (F_2, ArF, KrF, XeCl, XeF), and the related optics, and accessories.

Computer controlled, 4-axis *Filament Winder*

Branson 920IW *Ultrasonic Welder*

Recent Publications:

1. Catiker, E., Stakleff – Sloan, K., Carr – Bondor, K., Sancaktar, E., "Laser Perforated Polymer Films for Possible Use in Tissue Engineering", Surface Innovations 4, 23 (**2016**).
2. Tunalioglu, M. S. and Sancaktar, E., "Role of Adhesion in Sand Paper Failure Progression", International Journal of Adhesion and Adhesives 67, 14 (**2016**).
3. Catiker, E. and Sancaktar, E., "Blends of Poly(3-hydroxybutyrate) with Poly(b- alanine) and Its Derivatives", Journal of Applied Polymer Science 131, DOI: 10.1002/app.40484 (**2014**).
4. Kotomin, S.V., Chang, I-Ta, Sancaktar, E. and Iarikov, D., "The Tribology and Micromechanics of Polystyrene-Nanoclay Nanocomposites", Mechanics of Composite Materials 49, 651 (2014). {Translated from Mekhanika Kompozitnykh Materialov, 49, 973-984 (**2013**).}
5. Bian, J., Lin, H.L., He, F.X., Wei, X.W., Chang, I.-T. and Sancaktar, E. "Fabrication of Microwave Exfoliated Graphite Oxide Reinforced Thermoplastic Polyurethane Nanocomposites: Effects of Filler on Morphology, Mechanical, Thermal and Conductive Properties" Composites Part A: Applied Science and Manufacturing 47, 72 (**2013**).