

Exponent®
Engineering & Scientific Consulting

Erin Askounis, Ph.D.

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Professional Profile

Dr. Askounis leverages her background in materials science to assist clients with assessing the specification, manufacturing, and end-use performance of polymeric materials used in finished goods. She routinely consults on the durability and potential failure modes of components in the building and construction, plumbing, automotive, oil and gas, consumer products, and consumer electronics industries. She has assisted clients with material compatibility assessments, failure analysis, product development, polymer processing, polymer fracture, material selection, and reliability testing. Her prior project work includes a wide array of synthetic materials such as rubbers, elastomers, plastics, thermosets, greases and lubricants, sealants, and fiber-reinforced composites. This includes specific commercial materials such as EPDM and EPM, nitrile rubbers (NBR, HNBR), thermoplastic elastomers (TPE, TPU, SEBS, SEPS), styrene butadiene rubber (SBR), natural rubber (NR), butyl rubber (IIR), chloroprene rubber (CPR), fluoroelastomers (FKM), silicones (RTV), polyurethanes (PU), nylon, crosslinked polyethylene (PEX), and polypropylene.

Dr. Askounis has extensive experience in several techniques to characterize materials, including spectroscopy (FTIR, UV-Vis, NMR), chromatography (GPC), thermal (TGA, DSC), thermomechanical (DMA, TMA), microscopy (optical, SEM), and crystallography (XRD). She has utilized her characterization experience to solve problems related to environmental stress cracking, creep, fatigue, mechanical overload, material weathering, wear, polymer aging, chemical contamination, polymer fractography, and polymer degradation.

Prior to joining Exponent, Dr. Askounis obtained her Ph.D. in Materials Science and Engineering from the University of California, Los Angeles where she led the development, synthesis, and fabrication of new high-performance stimuli-responsive polymer and composite materials. As part of her work, she developed variable stiffness materials stimulated by light, temperature, and solvent, capable of ultra-wide tunable stiffness ranges for use in biomedical applications. She also developed, synthesized, and fabricated new dielectric elastomeric materials and actuators exhibiting both high strain and rapid frequency response for use in robotics applications.

Academic Credentials & Professional Honors

Ph.D., Materials Science and Engineering, University of California, Los Angeles (UCLA), 2020

B.S., Chemistry, Northeastern University, 2015

National Defense Science and Engineering Graduate Fellowship (NDSEG), 2016

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Professional Affiliations

ASTM International (2022-Present)

American Chemical Society (ACS) (2012-Present)

Society of Women Engineers (SWE) (2015-Present)

Society of Plastics Engineers (SPE) (2021-Present)

Publications

Askounis E*, Shi Y*, Plamthottam R*, Libby T, Peng Z, Youssef K, Pu J, Pelrine R, Pei Q. (2022) A processable, high-performance dielectric elastomer and multilayering process. Science. 8; 377 (6602): 228-232

Askounis, E.*, Qiu, Y.*, Guan, F., Peng, Z., Xiao, W., Pei, Q. (2020) Dual Stimuli-Responsive Polymer Composite with Ultra-Wide Variable Stiffness Range Triggered by Water and Temperature. ACS Applied Polymer Materials 2 (5), 2008–2015. *Authors contributed equally.

Wang, L., Yang, Y., Chen, Y., Majidi, C., Iida, F., Askounis, E., and Pei, Q. (2018). Controllable and Reversible Tuning of Material Rigidity for Robot Applications. Materials Today 21: 563–576.

Ghabbour, E. A.; Davies, G.; Misiewicz, T.; Alami, R. A.; Askounis, E. M.; Cuozzo, N. P.; Filice, A. J.; Haskell, J. M.; Moy, A. K.; Roach, A. C.; Shade, J. (Elsevier, 2017) National Comparison of the Total and Sequestered Organic Matter Contents of Conventional and Organic Farm Soils. Advances in Agronomy Vol. 146, pp 1–35.

Hu, W., Ren, Z., Li, J., Askounis, E., Xie, Z. and Pei, Q. (2015). New Dielectric Elastomers with Variable Moduli. Advanced. Functional Materials 25: 4827–4836.

Presentations

Askounis, E., Qiu, Y., Guan, F., Peng, Z., Pei, Q. Dual stimuli responsive polymer composite with ultra-wide tunable stiffness range triggered by water and temperature, ACS Fall 2020 Virtual Meeting & Expo, August 2020.

Askounis, E. Augustine, M., Lee, J., Vulpe, C. Multiple mechanisms of PAH toxicity in Daphnia magna: Effects of an AhR agonist and competitor on genes involved in toxicant pathways, Experimental Biology 2014, San Diego, CA, April 2014.

Askounis, E., Kirss, R. Synthesis of Frustrated Lewis Pairs Based on Ferrocenyl Phosphines, Poster Presentation, ACS Spring 2014 Meeting &Expo, Dallas, TX, March 2014.