Assistant Professor Alshakim Nelson has received a CAREER Award from the National Science Foundation. The CAREER (Faculty Early Career Development) Program is a Foundation-wide program that "offers the National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations."

Professor Nelson applies his expertise in organic chemistry, polymer chemistry, and supramolecular chemistry to design stimuli-responsive materials for life science applications. Using interdisciplinary approaches such as living anionic polymerizations, rheological characterization, culturing microbes, and direct-write 3D printing, the Nelson research group is leveraging the stimuli-responsive behavior of materials to facilitate their fabrication or patterning. Ongoing work includes the development of polymer-living cell composite materials ("living materials") and polymers to create anatomical models for human tissue.

Professor Nelson's NSF CAREER proposal, "CAREER: Supramolecular engineering of hydrogel forming triblock copolymers," aims to elucidate molecular-level design principles that can govern and control the physical properties of hydrogels. Improved understanding of the properties of hydrogels—soft materials largely comprised of water with numerous health-related uses (e.g., hygiene, contact lenses, medical implants, wound care)—will foster new design strategies for this important class of materials. In addition to the scientific goals, this project aims to expand access to and interest in polymer science for pre-college and college students and increase diversity within the field. Efforts will include the creation of educational modules to introduce polymer science to K-12, undergraduate, and graduate students, the engagement of disadvantaged and under-represented groups in STEM, and an emphasis on teacher training to maximize the overall impact of this project.

For more information about this NSF CAREER Award, please visit the award website.

For more information about Professor Nelson and his research, please visit his faculty page and research group website.