Biography

Dr. Patrick Flowers is an expert in the fields of nanoscale materials science and additive manufacturing, with a focus on the synthesis and characterization of materials. In his research, he adapts various materials manufacturing techniques to extraterrestrial environments. He graduated with a PhD in Chemistry from Duke University and a B.S. in Chemistry from Southeastern Louisiana University. At Southeastern Louisiana University, Dr. Flowers was part of a large research effort involving novel organic synthesis techniques under Dr. Debra Dolliver. He also performed contracted research for local industries as a part of the SEAL program under Dr. David Norwood. At Duke University, Dr. Flowers was the lead investigator on a number of research projects dealing with printable electronic materials. He developed a resistively switchable memory material comprised of core-shell Cu-SiO_2 nanowires dispersed in a specialized ink formulation. He also contributed to the development of a conductive 3D printable filament which utilizes copper-based filler. He was the primary scientist in the optimization of printing techniques for the new conductive filament material, during which time he demonstrated many examples of useful 3D printed electronic components including inductors, conductors, capacitors, and resistors. He fabricated 3D printed antennas for microwave imaging applications. He also demonstrated a hybrid approach for incorporating COTS electronic components into 3D printed circuits. At Redwire (formerly Made In Space), Dr. Flowers now serves as manager of the materials science department. He is actively involved in a number of projects related to additive manufacturing for space exploration.