

“Innovation with Intent”: ASU’s Advanced Materials Initiatives

William T. Petuskey

Professor, School of Molecular Sciences and Director, The Advanced Materials Initiatives
Arizona State University

July 23, 2020

Arizona State University has put forth a substantial effort in both research and education on current topics in materials science and engineer, achieving a number of “firsts” such as its long-sustained excellence in high resolution microscopy. It has done this without having a primary focal academic unit, but rather having expertise spread broadly over 9+ academic schools and departments, two primary colleges and four research institutes and initiatives. In the current environment of multidisciplinary and transdisciplinary efforts applied to solving big technological problems, this is proving to be an advantage. ASU’s early successes stem from its strengths in solid state chemistry and condensed matter physics, that eventually evolved into powerful efforts in solid state electronics and sensors, materials for solar energy, and structural materials for aeronautical, astronautical and terrestrial construction among others. ASU’s materials effort is now poised to move into a new generation of activities that address such worldly issues as energy and resource sustainability, climate change, health and security, and other worldly interests such as space exploration. ASU’s Advanced Materials Initiatives is focused on organizing its considerable intellectual and research capabilities into substantial efforts towards materials discover, design and development that will enable effective solutions. It has already helped to established major new efforts on (1) “Materials of the Universe”, (2) “Materials for a Circular Economy”, and (3) “Ultra Materials for Next Generation Electronics”. It has now embarked on an effort to organize and fund a national effort on “Chiral-Quantum Materials and Devices” aimed at new concepts of quantum devices that will operate beyond cryogenic temperatures and serve applications in sensing, information storage and, even, computation. This presentation will review the missions, activities and ambitions of these new efforts.