

The **Additive Manufacturing Materials, Prototyping and Applications Center (AMMPAC)** leverages leading expertise and state-of-the-art analytical and manufacturing equipment at Stony Brook University (SBU) and at the Composites Prototyping Center (CPC) to support education, training, adoption and optimization of additive manufacturing technologies. This is accomplished via a collaborative model for access to:

- a. Prototyping facilities at SBU and CPC, including fused deposition thermoplastic polymer and composite printing, UV photopolymerization and Digital Light Processing (DLP) printing;
- b. Advanced functional materials research and development facilities, including polymer nanocomposite blending and extrusion equipment, systems for spark plasma sintering and ball milling, wet chemistry and electrochemical synthesis;
- c. State-of-the-art testing and characterization at SBU (including surface X-ray and chemical (vibrational) microspectroscopies, X-ray fluorescence, scanning electron microscopy, mechanical impact, tensile strength and adhesion testing, and facilities for accelerated degradation tests), at CPC (mechanical testing and digital scanning), and via university collaborations with nearby Brookhaven National Laboratory (providing synchrotron-based X-ray imaging and spectroscopy as well as nanoscale imaging, X-ray diffraction and tomography); and
- d. Advanced digital design assistance (at SBU, including collaboration with the new Digital Design Laboratory in the Dental School and computational mechanics and multiscale design expertise in the Department of Mechanical Engineering).

Other local partners are being engaged to broaden the impact of AMMPAC activities, including the New York State Advanced Energy Center (which houses an industrial partner focused on design of materials for additive manufacturing as well as other potential end-users), the facilities under development for the engineering-driven medicine initiative for the College of Engineering and Applied Sciences at Stony Brook (which will include a research focus in organ printing), the outreach programs of the Institute for Research and Technology Transfer at Farmingdale State University, Suffolk County Community College's Advanced Manufacturing Training Center, and new collaborative activities between AMMPAC and the New York Institute of Technology and Columbia University. Additional collaborations will help to grow the center into new markets and opportunities, regionally as well as nationally. AMMPAC also has representation in the SUNY Networks of Excellence and NYSERDA additive manufacturing initiatives, promoting further growth and outreach.

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