



## Xiao Hu

Associate Professor

Physics & Astronomy/Molecular & Cellular Biosciences/Biomedical Engineering

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### Education:

BS (Crystal and Material Physics), Nanjing University

MS (Physics), Tufts University

MS (Biomedical Engineering), Tufts University

PhD (Polymer and Biophysics), Tufts University

Postdoctoral (Tissue Engineering), Tufts University

### Research Expertise:

Protein-based Biomaterials | Polymer Physics | Tissue Engineering | Controlled Drug Release and Delivery | Biosensor and Nanomedicine

My research focus is on protein or biopolymer materials, including fibrous proteins (silks, elastins, resilins, keratins, collagens), variable plant proteins (zeins, soy proteins, etc.) and other recombinant or natural polymers, and their related engineering technologies to control the self-assembly of these polymer systems into functional materials. These materials can be fabricated into tunable forms such as films, gels, particles, fibers, or composites, and can be widely used for different green or biomedical technologies, including tissue regeneration medicine, disease model, controlled drug delivery and release, antibody and vaccine storage, flexible biosensors, green plastics, biophotonics, and nano-biotechnology.

### Honors and Awards:

Rising Innovator Award, Rowan University (2016)

### Recent Academic Projects:

Flexible Protein Sensor Materials for Controlled Drug Delivery and Release (NJHF)

Continuous Processing for Improved Properties of Nanofibers (NSF)

### Recent Publications:

Wang F, Aravind SSJ, Wu H, Forsys J, Venkataraman V, Ramanujachary K, Hu X (2017) Tunable green graphene-silk biomaterials: Mechanism of protein-based nanocomposites. *Mater Sci Eng C* 79:728-739.

Torculas M, Medina J, Xue W, Hu X (2016) Protein Based Bioelectronics. *ACS Biomater Sci Eng*. 2:1211-1223.

Wang F, Wolf N, Rocks E-M, Vuong T, Hu X (2015) Comparative studies of regenerated water-based Mori, Thai, Eri, Muga and Tussah silk fibroin films. *J Therm Anal Calorim*. 122:1069-1076.

Hu X, Raja WK, An B, Takarova O, Cebe P, Kaplan DL (2014) Stability of Silk and Collagen Protein Materials in Space. *Sci Rep*. 3:3428.

Hu X, Tang-Schomer MD, Huang W, Xia X-X, Weiss AS, Kaplan DL (2013) Charge-Tunable Autoclaved Silk-Tropoelastin Protein Alloys That Control Neuron Cell Responses. *Adv Funct Mater*. 23:3875-3884.

Qin G\*, Hu X\*, Cebe P, Kaplan D (2012) Mechanism of resilin elasticity. *Nature Commun*. 3:1003.