

High Temperature Synthesis by Direct Electrification

Liangbing (Bing) Hu

Herbert Rabin Distinguished Professor
University of Maryland, College Park



In this seminar, I will briefly discuss our research on wood nanotechnologies, solid state batteries and manufacturing. Then I will focus on high temperature processing using direct electrification. I will use two major examples to illustrate **extremely high temperature** (2000-3000K) as a disruptive platform to design/synthesize novel materials, from single atom, high entropy nanoparticles (*Science* 2018, 359, 1489, Cover), to bulk ceramics/metals for energy technologies and other applications in extreme conditions (*Science* 2020, May 1, Cover).

Bio: Liangbing Hu received his B.S. in physics from the University of Science and Technology of China in 2002. He did his Ph.D. (2002-2007) at UCLA, focusing on carbon nanotube based nanoelectronics. His thesis work entitled laid the foundation for **Unidym Inc**, which he joined as a co-founding scientist. Currently, he is a *Herbert Rabin Distinguished Professor* at University of Maryland College Park. His research group focuses on materials innovations, device integrations, and manufacturing in general, with ongoing research actives on wood nanotechnologies, 3000K for extreme materials, and beyond Li-ion batteries.

He has published over 350 research papers (including *Science* and *Nature* in 2018, 2019, 2020) and given more than 150 invited talks. He received many awards, including: Highly Cited Researchers list by Clarivate Analytics (2016, 2017, 2018, 2019), Young Innovator Award (2019, Wiley-Small Journal); Blavatnik Awards for Young Scientists (2019 Finalist); TAPPI Nano Middle Career Award (2019); 2019 Exemplary Research Recognition, 2018 R&D 100 Winner, 2018 HIVE 50 Innovator, the Nano Letters Young Investigator Lectureship (2017), Office of Naval Research Young Investigator Award (2016), ACS Division of Energy and Fuel Emerging Investigator Award (2016), SME Outstanding Young Manufacturing Engineer Award (2016), University of Maryland Junior Faculty Award (School of Engineering, 2015), 3M Non-tenured Faculty Award (2015), Maryland Outstanding Young Engineer (2014), University of Maryland Invention of Year (2019, 2014), Campus Star of the American Society for Engineering Education (2014), Air Force Young Investigator Award (AFOSR YIP, 2013). For more info, please visit www.bingnano.umd.edu. Dr. Hu is the director of the Center for Mateirals Innovations at the University of Maryland College Park (www.carb.umd.edu). He is also the Co-Founder of Inventwood LLC. (www.inventwood.com) and of HighT-Tech LLC (www.hight-tech.com).

