

“Record nano-photonic devices and their nano-manufacturing”

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Abstract- Nano-manufacturing and the "smart" assembly of nanomaterials bring enormous functionalities to the nanoscale because materials act as geometries for light. In this talk, I will discuss record devices that we have recently demonstrated including the first topological laser, the first bound state in the continuum laser, a laser that can emit light with arbitrary orbital angular momenta in wavelength-scale structures. I will also discuss how sub-wavelength nanostructures enable broadband negative index metamaterials, record-breaking exceptional-points nano-sensors by complex mode coupling, as well as Berry phase enabled topological metasurfaces. While most of these devices have been demonstrated by top-down nano-manufacturing, prospects for bottom-up nanomanufacturing will be quickly discussed.

Bio- Boubacar Kanté is the Chenming Hu associate professor of Electrical Engineering and Computer Sciences (EECS) at the University of California Berkeley. In 2010, he received a Ph.D degree in Engineering/Physics from “Université de Paris Sud” (Orsay-France). He was assistant professor and then associate professor of Electrical and Computer Engineering (ECE) at UC San Diego from 2013 to 2018. His research interests include wave-matter interaction and nano-optics. Boubacar Kanté is a 2020 Moore Inventor Fellow. He received the 2017 Office of Naval Research (ONR) Young Investigator Award, the 2016 National Science Foundation (NSF) Career Award, The best undergraduate teacher award from UC San Diego Jacob School of Engineering in 2017, the 2015 Hellman Fellowship, the Richelieu Prize in Sciences from the Chancellery of Paris Universities for the best Ph.D in France in Engineering, Material Science, Physics, Chemistry, Technology in 2010, the Young Scientist Award from the International Union of Radio Science (URSI) in Chicago in 2007, the Fellowship for excellence from the French Ministry of Foreign Affairs in 2003 for his undergraduate studies, a Research Fellowship from the French Research Ministry for his Ph.D studies.