Abstract:
Conceivably, all living organisms process information of varying degrees. For instance, brains are powerful information processing units and can achieve highly complex nonlinear computations across numerous species. Any implementation of molecular systems with similar capability is of great significance for advanced computing. Relatively little is known if the computing power of molecular systems can complement and/or extend the capability of silicon-based computing systems. However, it’s evidence that bio-inspired computing has a great potential with impressive programmability, massive parallelism, high-capacity storage, and high energy efficiency. In this talk, I will present some of our ongoing work on molecular programming with nucleic acids, and how we can implement molecular programs to probe fundamental questions at the molecular scale.

Biography:
Hieu Bui is an Assistant Professor at the Catholic University of America in Washington DC with affiliation in the Department of Electrical Engineering and Computer Science. He received his Ph.D. degree in Computer Science from Duke University, and his M.Sc. and B.Sc. degrees in Electrical and Computer Engineering from Boise State University. His current research activities span a broad range of areas including molecular computing, DNA nanotechnology, systems biology, bioelectronics, and nanophotonics. He has received several awards for his research including National Academy of Sciences Research Associateship, Outstanding Publication Award from National Research Council, Outstanding Dissertation Award from Duke University Computer Science, Duke University Nanoscience Fellowship, and Micron Technology Scholar. His research work has been published in peer-reviewed journals (i.e. Nature Nanotechnology, Nano Letters, ACS Synthetic Biology, ACS Nano, Small, New Journal of Physics), conferences (i.e. Foundations of Nanoscience, International Conference on DNA Computing and Molecular Programming, ISDRS, IEEE IRW) and book chapters.