



University of Dayton

**School of
Engineering**

Nanomaterial-enhanced Integrated Photonics

By

Dr. Andrea M. Armani



**On February 28, 2019 (Thursday)
12 pm – 1 pm @ Science Center 114**

Abstract:

Integrated photonics offers a potential alternative to integrated electronics, with reduced heating and faster data rates. However, to achieve many of the desired performance metrics, it is necessary to combine disparate material systems. Heterogeneous integration is plagued by challenges, including different lattice constants, thermal expansion coefficients, and fabrication compatibilities, all of which can impact the final device performance and lifetime. Therefore, new materials and material systems as well as fabrication methods are desired. One approach is to combine the conventional top-down fabrication methods and optical materials, such as silica and silicon, with bottom-up fabrication and nanomaterials. These hybrid systems provide access to optical behavior and performance not attainable with conventional approaches. This talk will present an overview of the integrated hybrid photonic device research in the Armani Lab, including approaches based on organic small molecules and plasmonic nanoparticles to developed Raman lasers and frequency combs.

Bio:

Andrea Armani received her BA in physics from the University of Chicago (2001) and her PhD in applied physics with a minor in biology from the California Institute of Technology (2007), where she continued as the Clare Boothe Luce post-doctoral Fellow in biology and chemical engineering. She is currently a Professor of Chemical Engineering and Materials Science and Electrical Engineering-Electrophysics in the Viterbi School of Engineering at the University of Southern California. Armani has received numerous awards, including the Sigma Xi award for excellence in research, the SPIE BiOS Young Investigator Award, ONR Young Investigator Award, the Technology Review Top 35 Innovators under 35, the Congressionally Directed Medical Research Program New Investigator Award, the USC Mellon Mentoring Award for Undergraduate Mentoring, the NIH New Innovator Award, the PECASE, the Hanna Reisler Mentoring Award, and the World Economic Forum Young Global Leaders.

[Light refreshment will be available during the talk](#)