



Birck Nanotechnology Center

Complex Nanophotonics

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Bio: Hui Cao is the Frederick W. Beinecke Professor of Applied Physics and Professor of Physics at Yale University. She received her Ph.D. degree in Applied Physics from Stanford University in 1997. Her doctoral research was in the area of semiconductor microcavity quantum electrodynamics. Prior to joining the Yale faculty in 2008, Professor Cao was on the faculty of the Department of Physics and Astronomy at Northwestern University from 1997 to 2007. Her technical interests and activities are in the areas of mesoscopic optics, complex photonic materials and devices, nanophotonics, and biophotonics. She has co-authored one book and ten book-chapters, and has published 6 review articles and 240 journal papers. She is a Fellow of the AAAS, APS and OSA.

Abstract: Thanks to rapid advances in nanofabrication technology, complex photonic nanostructures can be fabricated and display unusual properties. We have designed and fabricated complex nanophotonic devices for biomedical imaging applications. In this talk, I will present a few examples. The first one is the development of novel illumination sources for high-speed parallel imaging and multimodality microscopy. The second example is the coherent control of wave propagation in multimode fibers for light delivery. The last example is the demonstration of compact, high-resolution spectrometers for signal detection. These examples highlight the application-drive device sign that combines hardware fabrication and software development.