Presenter

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Abstract

Title: ***Optical Forces and Slow Light in Microresonators***

Advances in nanofabrication techniques now allow us to pattern materials on the scale of the wavelength of light. I will show how computational simulations can be used to explore novel optical phenomena in nanofabricated devices such as microcavity and photonic-crystal cavity resonators. First, I explore the use of optical (or radiation-pressure) forces for reconfiguration and positioning of integrated optical devices. Coupled microcavity systems exhibit resonant enhancement of the force, indicating that light forces should lead to significant displacements and open a new route for all-optical control. Second, I describe how dynamically-tuned photonic crystal microresonators can be used to slow down the speed of light on-chip, for applications in optical delays and buffers.

Biography

DR. POVINELLI *is a postdoctoral researcher at Stanford University in the Ginzton Laboratory and the Department of Electrical Engineering. She received a PhD in Physics from MIT in 2004, an M. Phil. in Physics from the University of Cambridge in 1998, and a BA with Honors in Physics from the University of Chicago in 1997. She was awarded several graduate fellowships for her doctoral work, including the Lucent Technologies GRPW Fellowship, the NSF Graduate Fellowship, the MIT Karl Taylor Compton Fellowship, and the Churchill Fellowship. In 2006, she was selected as one of five national recipients of a $20,000 L'Oréal For Women in Science Postdoctoral Fellowship grant. She has co-authored twenty refereed journal articles and holds three US Patents.*