



## ICFO Colloquium HARRY A. ATWATER 'Electrically Tunable Nanostructures for Control of Absorption, Emission and Scattering'

HARRY A. ATWATER

March 04, 2016

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Friday, March 4, 12:00, ICFO Auditorium

**HARRY A. ATWATER**

Professor at California Institute of Technology

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Harry Atwater is the Howard Hughes Professor of Applied Physics and Materials Science at the California Institute of Technology. Professor Atwater currently serves as Director of the DOE Joint Center for Artificial Photosynthesis. Atwater's scientific interests have two themes: photovoltaics and solar energy as well as plasmonics and optical metamaterials. His

group has created new high efficiency solar cell designs, and have developed principles for light management in solar cells. Atwater is an early pioneer in nanophotonics and plasmonics; he gave the name to the field of plasmonics in 2001. He has authored or coauthored more than 400 publications cited in aggregate > 33,000 times and his group's advances in the solar energy and plasmonics field have been reported in Scientific American, Science, Nature Materials, Nature Photonics and Advanced Materials.

Progress in understanding resonant subwavelength structures has fueled an explosion of interest in both fundamental processes and nanophotonic devices for imaging, sensing, solar energy conversion and thermal radiation control. Achieving electronic tunability of the optical properties is also an emerging opportunity to bring nanoscale resonators and antennas to life as dynamic objects. While the optical properties of photonic and plasmonic nanostructures are typically fixed at the time of fabrication, gated field effect tuning of the carrier density in conducting oxides and two-dimensional materials enables the optical dispersion of individual structures to be altered from dielectric to plasmonic, yielding active nano-antenna arrays with electrically tunable absorption, radiative emission and scattering properties.

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