Plasmonics and Photonics for Energy Conversion

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The use of plasmonics and photonics to control light and heat close to the thermodynamic limit enables exciting opportunities for nanoscale energy conversion. The efficient harvesting and conversion of photons into photons of a different energy, phonons or energetic charge carriers open up a myriad of opportunities for converting, for example sunlight, into fuels, heat and light. By employing artificially structured materials (metamaterials), hybrid plasmonic colloids, dielectric nanoresonators or engineered metal nanoantennas, I will show different approaches for converting energy by controlling, tuning and enhancing light-matter interactions.