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Applications of nanophotonics —from bright colours to nanometrology and energy conversion

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Structuring materials below the wavelength scale provides a means for light harvesting to nanometric dimensions. Particularly suitable are metallic nanostructures due to the existence of highly confined surface plasmon excitations, which allow efficient harvesting of electromagnetic energy and its transduction to other forms, for example acoustic surface waves or the supply of energy to catalyse chemical reactions.

Judiciously designed dielectric nanostructures can achieve similar energy concentration via the excitation of Mie-type resonances. In my talk, I will discuss a number of applications of these systems, from generation of structural colour to applications in energy conversion and nanometrology.

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