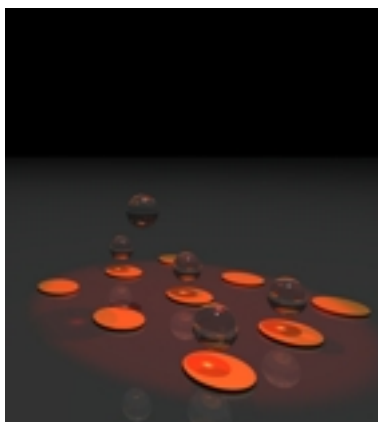


Recent advances in surface plasmon-based optical manipulations are the subject of a review in the Journal of Optics A, coauthored by Maurizio Righini and Prof. Romain Quidant.



Polymer micro-spheres approach a pattern of gold pads illuminated by a red laser and get trapped. Optical manipulation based on surface plasmons is a novel and promising application of plasmonics, which opens new opportunities for the elaboration of future integrated opto-fluidic devices. This field of research is explored in “Light-induced manipulation with surface plasmons,” a review by M. Righini (PhD at ICFO), C. Girard (Professor at CEMES, France) and R. Quidant (Group Leader at ICFO and ICREA researcher).

By exploiting the enhanced optical forces at patterned metal surfaces, the authors demonstrate novel integrated optical tweezers based on surface plasmons called “Plasmonic tweezers”. They show how a suitable engineering of plasmon fields near micro-gold pads enables trapping small objects at a specific location of the surface with much weaker laser intensity as compared to conventional optical tweezers. They also show that, beyond their low power requirement, this new generation of integrated optical tweezers offers new perspectives in optical manipulation, including parallel trapping with a single beam and controllable selectivity on the object size or refraction index.