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The effect of Au condensation in laser desorption/ionization of organic materials ANEESH PRABHAKARAN, ARNAUD DELCORTE, Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, Belgium — Matrix-assisted desorption/ionization (MALDI) mass spectrometry, where the analyte is mixed in a low molecular weight matrix, often constitutes a limitation for the analysis and imaging of real world samples. Herein, we investigate the influence of a thin layer of gold (1-15nm) deposited on the surface of different organic materials, in the laser ablation using 355nm wavelength light. We see a significant effect of the condensed metal nanoparticles in the laser ablation process. Compared to pristine samples, the metallized samples show a significant intensity of characteristic fragments as well as metal cationized molecules. Relatively soft desorption/ionization is indicated by the observation of characteristic molecular ions of the different analytes. The observed effects can be explained by the increased laser absorption by the gold nanoparticles in this wavelength range and the increased ionization by the gold. Hence the metallization improves the surface characterization using lasers and also proves to be a novel technique for chemical imaging of organic surfaces.

Aneesh Prabhakaran
Institute of Condensed Matter and Nanosciences,
Université catholique de Louvain, Belgium

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