



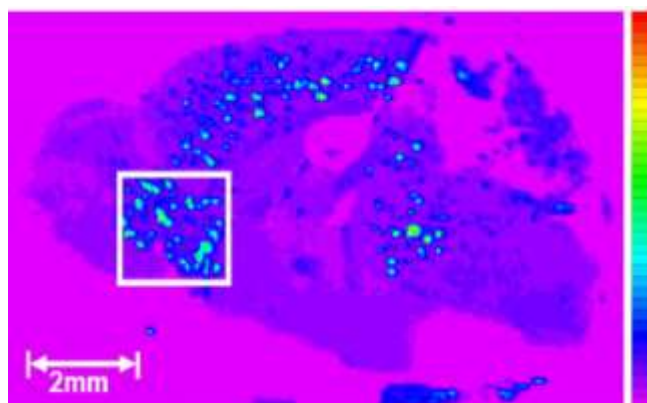
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## Nanoparticle-based immunohistochemistry

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### Abstract

Inductively coupled plasma–mass spectrometry (ICP–MS) has been used extensively in the life sciences for trace element determination in diverse sample types including blood serum and tissue. The analytical capabilities of ICP–MS are extended through the use of laser



ablation (LA) which permits direct probing of elements in solid samples. Element labeling of biomolecules in particular of proteins and detection of hetero elements in biomolecules by inductively coupled plasma mass spectrometry (ICP-MS) has become an important research direction in bio-analytics. Novel applications of LA-ICP-MS in the biosciences include elemental profiling of

electrophoresis gels and microanalysis/mapping of microtomed tissue.

Imaging of soft tissues by laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) has emerged over the last few years since the first LA-ICP-MS analyses of soft tissues were presented in the late 1990s. At that time, the focus in quantitative tissue imaging lay on the determination of spatially resolved concentrations of Cu, Zn, Mo, Cd and Pb in various samples.

Application of LA-ICP-MS for imaging has gained growing attention in the last few years, and even more since the coupling with isotopically enriched and labelled antibodies for quantitative immunoassays became available.

In this work, the application of metal nanoparticles such as CdTe quantum dots and gold nanoparticles for LA-ICP-MS purposed is investigated.

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Laboratoř metalomiky a nanotechnologií

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