

O25. ELEMENTAL BIOIMAGING OF TATTOO PIGMENTS IN LYMPH NODE AND SKIN TISSUE

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Despite the popularity of tattooing, regulations for tattoo inks and their individual constituents are still insufficient concerning possible health risks. For an adequate risk assessment, knowledge about concentration, distribution and deposition of the dyes after tattooing is essential.

Therefore, human tissue samples were investigated with micro xray fluorescence (μ XRF) and laser ablation inductively coupled plasma mass spectrometry (LAICPMS). Metals, metalloids or heavy metals, which are contained either as colouring components or as contaminants, can be analysed and quantified directly in the tissue.

In this work, LA-ICPMS analysis was applied in order to study the distribution of iron and titanium in human lymph node and skin tissue. The ablation of the sample material occurred with a 213 nm Nd:YAG laser. A helium/argon gas flow transported the resulting aerosol to the ICPMS for elemental analysis. Quantification was performed with homemade matrixmatched gelatine standards. Additionally, μ XRF analysis validated the results.

μ XRF and LA-ICP-MS were shown to be powerful techniques for investigating the allocation of dyes in lymph node and skin tissue. In accordance to the dye-containing regions in microscopic images, high concentrations of iron (skin and lymph node) and titanium (lymph node) were observed with LAICPMS. Furthermore, chlorine could be detected qualitatively by μ XRF. Especially, the high concentration of metals within the lymph node indicates an allocation of the dyes by the lymphatic system.