

Abstract in english:

*Drop coating deposition Raman spectroscopy is a vibrational spectroscopic method based on the principle of Raman scattering. Deposition of a small volume of solution ( $\mu\text{l}$ ) of a low concentration ( $\mu\text{M}$ ) on a special hydrophobic substrate and subsequent drying leads to a formation of a deposit from which we can accumulate a higher quality Raman spectrum than in the case of classical Raman spectroscopy. In this thesis, four contaminants (melamine, picloram, thiram, bentazone) were studied on new nanoparticle-based substrates prepared at our faculty. These hydrophobic substrates were compared to commercial substrates and proven to be suitable for further development. Next, artificially prepared mixtures of pairs of contaminants were studied using the commercial substrate. Every contaminant was detected and differentiated in each of these mixtures using factor analysis at relatively low concentrations. Furthermore, the contaminants were separated in some deposits. However, unknown spectra were detected, probably due to chemical reactions between the contaminants. Possibilities of contaminations or interactions with the substrate were eliminated. Finally, a real sample of infant formula artificially contaminated by melamine was studied. The contaminant was detected at concentrations equal to those detected in real cases. Drop coating deposition Raman spectroscopy showed its potential for detecting food contaminations.*