

Presentation title:

## Quick detection of drugs in fingerprints – functional tool for investigation

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We encounter many forms and types of evidence at crime scenes, but the most common is the fingerprint. We leave it every time we come into contact with an object that may turn out to be the instrument of a crime. It provides us with a lot of crucial information about a potential perpetrator - primarily DNA, which enables us to identify the perpetrator, but fingerprints contain a whole range of other substances, including those we have come into contact with [1]. Physical testing methods, more specifically Raman spectroscopy, is one of the more commonly used methods of identification, providing us with a chemical 'fingerprint' of a substance, but this has not yet been demonstrated for the analysis of substances from a fingerprint [2-4]. In the research presented here, we demonstrate the use of Raman spectroscopy for identification - paracetamol - as a template for other substances that can be dangerous to our health as well as to life, such as heroin, morphine, fentanyl, etc., directly from a fingerprint left on a glass matrix. This confirms the identification potential, despite the presence of many other substances, including companion substances (in tablets/pills) as well as substances secreted by our body (sweat). The ability to identify forbidden substances directly from a fingerprint found at a crime scene could provide evidence to law enforcement of a person's contact with a forbidden substance and lead to further conclusions. This research was supported by a grant National Science Centre 2021/41/B/HS5/03250 (K.W., M.K., A.L., M.Ch., M.Cz., E.G.).