



FORENSIC LITERATURE THESIS

LITERATURE THESIS

Title	: <u>Sample preparation and introduction techniques for fire debris analysis</u>
Keywords	: Fire debris analysis, ignitable liquid, arson, 2D GC, headspace, extraction
Forensic Expertise Area	: Fire debris – ignitable liquids
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SHORT DESCRIPTION

The aim of this literature thesis is to produce an overview of techniques used as sample preparation and sample introduction for fire debris analysis with the advantages and disadvantages of each method.

Arson is a crime that is frequently committed. From the crime scene fire debris samples are collected for further research to identify the possibly used ignitable liquid. Fire debris analysis proceed in two steps. The first step includes the sample preparation and introducing it to the chromatographic technique. Forensic experts uses various methods for this, e.g. dynamic and static head-space analysis and extraction methods. Each method has its advantages and disadvantages. The focus of this thesis should be on the first step of the fire debris analysis.

The second step is the chromatographic separation, with e.g. GC-MS or GCxGC, of the sample to identify the ignitable liquid.

REFERENCES

- 1) **Fire debris analysis – A survey of techniques used for accelerants isolation and concentration**, Rafal Borusiewicz, Problems of Forensic Sciences, 2002, Vol. 50, 44-63.
- 2) **Fire debris analysis**, Eric Stauffer, Julia A. Dolan and Reta Newman, Academic Press, 2007
- 3) **A solid-phase microextraction method for the detection of ignitable liquids in fire debris**, Journal of Forensic Science, 2008, Vol. 53, No. 3, 668-676

REQUIRED/RECOMMENDED EXPERTISE

Some knowledge on chemical analysis and chromatography