

FORENSIC LITERATURE THESIS

LITERATURE THESIS

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| Title | : Thermal analysis techniques in forensics |
| Keywords | : |
| Forensic Expertise Area | : Explosions & Explosives / Chemical Forensics |
| Department | : Chemical and Physical Traces |
| Institute/Company | : NFI |
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SHORT DESCRIPTION

Within the field of Chemical Forensics the main aim of the analysis performed is the identification/comparison of compounds/materials. The physical properties of materials (melting point, phase transitions, decomposition, etc.) generally have less value in these forensic investigations.

However, internationally, some forensic laboratories (e.g. within the field of Explosives), use thermal techniques such as thermogravimetric analysis (TGA), (modulated) differential scanning calorimetry ((M)DSC), Evolved Gas Analysis, micro-calorimetry (TAM), ..., and in literature there are examples of these kinds of techniques applied in forensics.

The literature research requested should focus on the link between the properties that are determined in thermal analysis techniques and the (potential) forensic applications, with an emphasis on the application within the field of forensic explosives analysis.

REFERENCES

- 1) Max M. Houck, *Materials Analysis in Forensic Science*, Elsevier, 2016, ISBN:0340548207, ISBN:978-12-800574-3;
- 2) Barbara Stuart, *Forensic Analytical Techniques*, Chapter 8, John Wiley & Sons, Ltd., 2013, ISBN:9780470687277;
- 3) A. Riga, Thermal analysis as an aid to forensics: Alkane melting and oxidative stability of wool, *Thermochimica Acta*, 1998, Volume 324, Issues 1–2, 21, pages 151-163;
- 4) A. Nazarian and C. Presser, Forensic analysis methodology for thermal and chemical characterization of homemade explosives, *Thermochimica Acta*, Volume 576, 20, Pages 60-70

REQUIRED/RECOMMENDED EXPERTISE

Basis knowledge of forensic chemistry/physics.