

## **FORENSIC LITERATURE THESIS**

### **LITERATURE THESIS**

Title	: Electrochemical detection and characterization of explosives
Keywords	: Explosives, explosions, electrochemistry
Forensic Expertise Area	: Explosives
Department	: Chemical and Physical Traces
Institute/Company	: Netherlands Forensic Institute
Supervisor	: Mattijs Koeberg
Email address	: m.koeberg@nfi.minvenj.nl
Telephone number	: 0708886312
UVA Co-assessor	: Arian van Asten
UVA Coordinator	: Arian van Asten

### **SHORT DESCRIPTION**

Both for forensic pre and post explosion investigations there is a need for rapid, non-invasive detection and characterization of explosives and explosive residues at the incident scene. This aids decision making (neutralization and evacuation) in case of intact IEDs and sampling strategies for lab analysis and forensic reconstruction (bomb location) in case of a post explosion scene. Recently the group of prof Karolien de Wael of the University of Antwerp developed and designed a novel platform for the rapid and field deployable electrochemical detection and characterization of drugs of abuse. Especially in combination with existing colorimetric tests this could yield robust chemical identification strategies. Currently, the NFI and the University of Antwerp are looking into the possibility to use this platform in the field of forensic explosives investigations. To this end an up-to-date overview of scientific literature on the electrochemical analysis of explosives is requested in this literature thesis assignment.

### **REFERENCES**

- 1) Yu *et al*, Recent developments in the electrochemical detection of explosives: Towards field-deployable devices for forensic science, *Trends in Analytical Chemistry*, 97(2017)374-384
- 2) O'Mahony *et al*, Nanomaterial-based electrochemical detection of explosives: a review of recent developments, *Analytical Methods*, 5(2013)4296-4309
- 3) Forzani *et al*, A hybrid electrochemical-colorimetric sensing platform for detection of explosives, *Journal of the American Chemical Society*, 131(2009)1390-1391

### **REQUIRED/RECOMMENDED EXPERTISE**

Basic understanding on analytical chemistry and electrochemistry is recommended.