

**Discrimination of Match-heads using the ECCO-DE**

*The Foster + Freeman ECCO-DE and ECCO*

Arson is a major crime, with over 2200 cases reported each year in the UK alone. Burnt match-heads used to initiate combustion are one of the pieces of evidence frequently encountered at arson scenes.

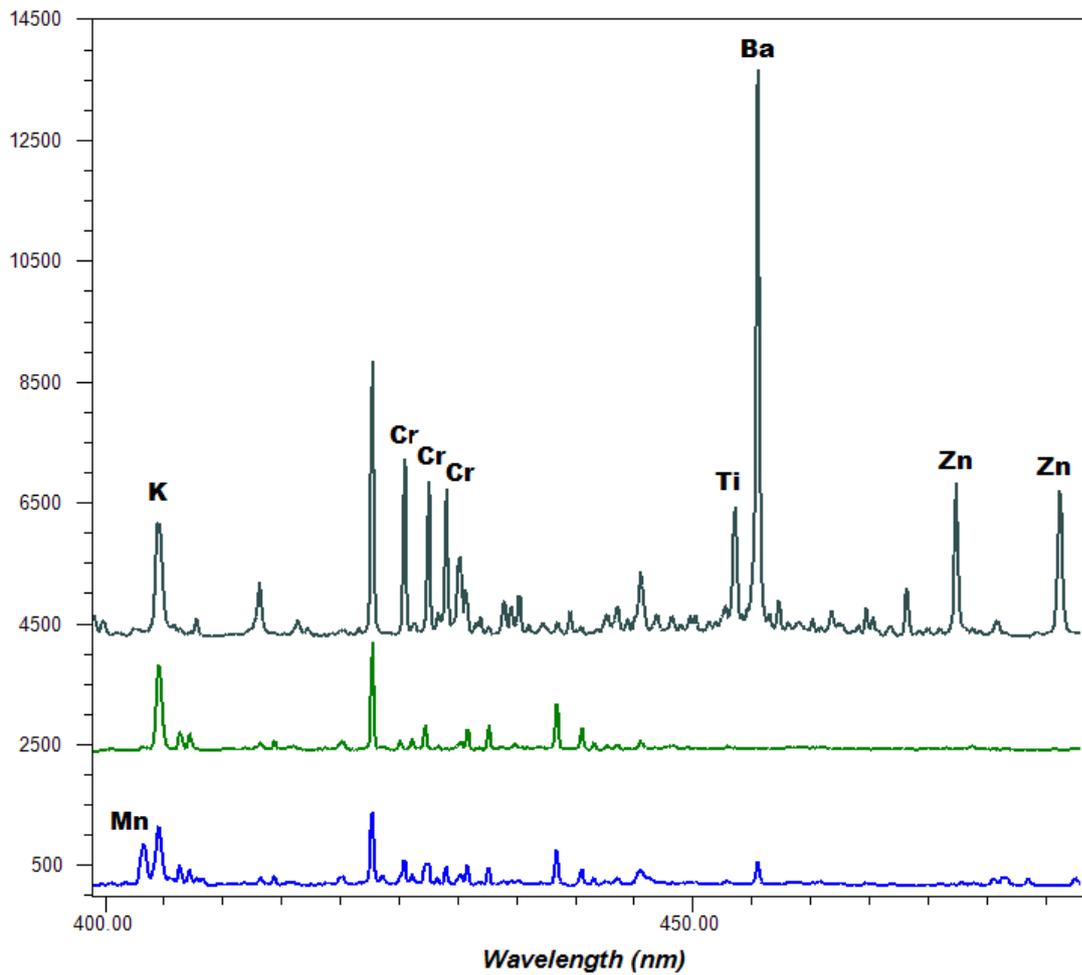
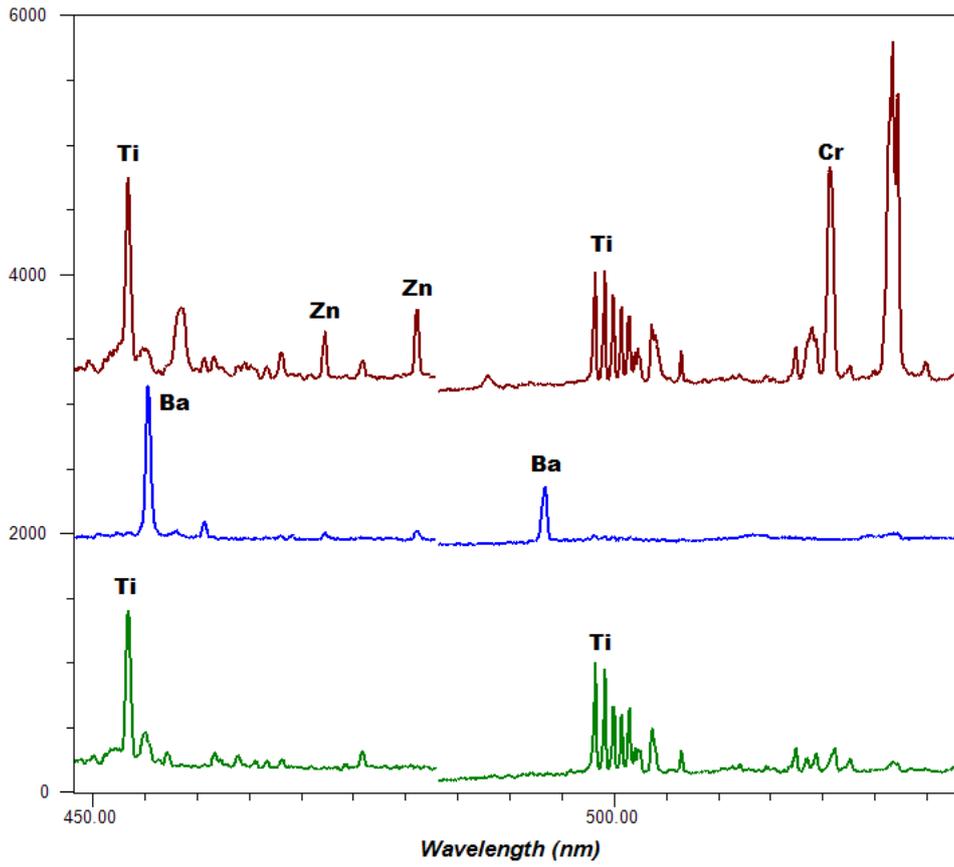
One of the goals of the arson scene examiner is to link evidence found on the suspect to that found at the scene of crime. To do this effectively, the discrimination rate of a particular technique must be known to give significance to the case when evidence from the crime scene and that found on the suspect cannot be discriminated.

In this note we show that the ECCO Laser Induced Breakdown spectrometer can be effectively used to discriminate burnt match-heads. Below are a range of spectra of 6 different burnt match-heads

The elements detected included, Potassium, Chromium, Barium, Manganese, Zinc and Titanium.

An internal study based on the visual comparison of the spectra of 21 different match brands yielded a discrimination rate > 98%. This indicates that when there is no discrimination between matches found at the arson scene and those found on the suspect there it is plausible that they may have come from the same source.

showing a wide variety of elemental compositions:



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