

Accepted Manuscript

Title: Visual study of explosive particles during fast thermal analysis

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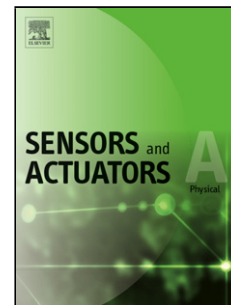
PII: S0924-4247(18)30479-5
DOI: <https://doi.org/10.1016/j.sna.2018.09.058>
Reference: SNA 11033

To appear in: *Sensors and Actuators A*

Received date: 18-3-2018
Revised date: 19-8-2018
Accepted date: 24-9-2018

Please cite this article as: Zuck A, Kendler S, Visual study of explosive particles during fast thermal analysis, *Sensors and amp; Actuators: A. Physical* (2018), <https://doi.org/10.1016/j.sna.2018.09.058>

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Visual Study of Explosive Particles During Fast Thermal Analysis

VISUAL STUDY OF EXPLOSIVE PARTICLES DURING FAST THERMAL ANALYSIS

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Highlights

- Visual changes can be observed during fast thermal analysis of particles performed on MEMS device.
- Visual changes of explosive particles are remarkably different from thus of non-explosive particles.
- Combining visual information (filming) to thermal measurement (thermogram) adds more dimensions to the measurement.
- Mathematical representation of the visual changes (correlation indices diagram) gives a criterion for the process.
- Correlation indices diagram can be used for field application of explosive detection.

ABSTRACT

A study of visual changes occurred during fast thermal analysis of explosive and non-explosive micrometric particles is presented. The experimental setup is based on a microcalorimeter MEMS device which allows linear temperature rising at high heating rates. The micro thermal analysis at high heating rates of ~ 500 °C/s was performed on tens of micrometer size particles while observing and filming the process using a digital camera (Sensicam™) operated at a rate of 45 frames per second. The study also employs image subtraction technique which emphasizes the changes occurred between following images.

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