Energy dispersive X-ray diffraction (EDXRD) can be applied for identification of liquid threats in luggage scanning in security applications. To define the instrumental design, the framework for data reduction and analysis and test the performance of the threat detection in various scenarios, a flexible laboratory EDXRD test setup was build. A data set of overall 570 EDXRD spectra has been acquired for training and testing of threat identification algorithms. The EDXRD data was acquired with limited count statistics and at multiple detector angles and merged after correction and normalization. Initial testing of the threat detection algorithms with this data set indicate the feasibility of detection levels of $> 95\%$ true positive with $< 6\%$ false positive alarms.

**General information**
State: Published
Organisations: Department of Physics, Neutrons and X-rays for Materials Physics, Department of Applied Mathematics and Computer Science, Image Analysis & Computer Graphics
Contributors: Kehres, J., Olsen, U. L., Lyksborg, M.
Number of pages: 9
Publication date: 2017

**Host publication information**
Title of host publication: Proc. SPIE 10403, Infrared Remote Sensing and Instrumentation XXV
Volume: 10391
Publisher: SPIE - International Society for Optical Engineering
Article number: 1039302
(Proceedings of S P I E - International Society for Optical Engineering).
Keywords: Threat detection, Liquid threats, LAGs, EDXRD
Electronic versions:
Untitled.pdf
DOIs:
10.1117/12.2274519
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017