Institut für Textiltechnik und Lehrstuhl für Textilmaschinenbau
RWTH AACHEN UNIVERSITY

Project title:	**QDotFiberSense**
Partners:	ITP GmbH - Gesellschaft für Intelligente Textile Produkte, Chemnitz, Germany Applied Quantum Materials Inc., Edmonton, Canada
Duration:	06/2020 – 05/2022
Funding Agency:	„Zentrales Innovationsprogramm Mittelstand – ZIM“

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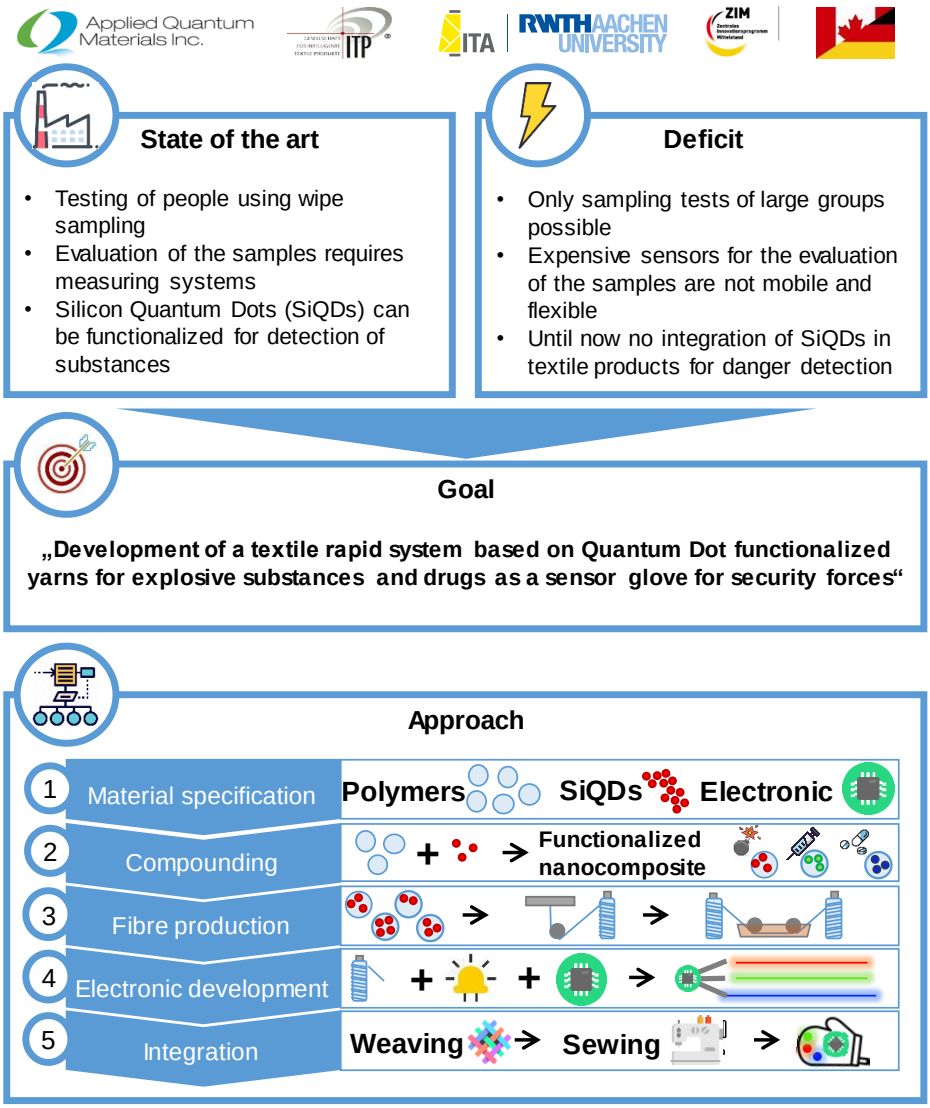


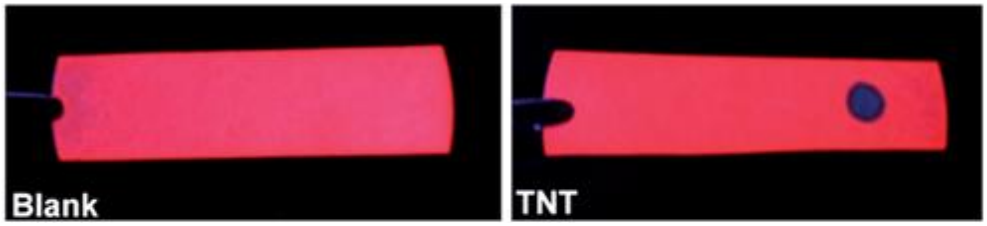
Mission Statement

Security checks at public events and at airports are both nerve-wracking and a necessity that gives a feeling of security for customers. Globalisation is reflected in a high level of travel, which is increasing the number of passen-gers worldwide by 4.6 % per year, and the number of checks required is

growing at the same rate. Since 2010, the number of terrorist attacks in Western countries has been growing, while the number of prevented terrorist attacks has fallen by 22%. Product features such as the reliability of explosive detection, intuitive operation for security personnel and rapid security checks for comprehensive control with minimum waiting times for customers are important for the development of appropriate security measures.

Approach

Within the project, a fast and efficient method for the first detection of dangerous materials such as explosives and drugs will be developed. By wiping the surfaces to be tested with a specially equipped glove, the results can be displayed immediately. The basis of the novel method are Quantum Dots (QD) specially developed by AQM, which are integrated by ITA in a combined actuator and sensor polymer optical fiber (POF) and integrated by ITP in a suitable form in a glove with the opto-electrical components. The QDs can be sensitized to certain substances by AQM, so that they lose their fluorescent properties. On contact with the corresponding material, the UV light within the POF is no longer converted into visible light, so that a signal visible to the user is generated. The effect is clearly demonstrated by the example of QD-coated and UV-illuminated paper samples that are brought into contact with explosive material at certain points:



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