PRESS RELEASE

EU-project microMole develops sensor systems for the tracing of synthetic drug laboratories via sewage systems

Nuremberg, Germany, March 14, 2016: The threat of synthetic drugs is one of the most significant current drug problems worldwide. In the last few years, the figure for worldwide abuse of synthetic drugs keeps rising, which is also accompanied by a significant increase in production of Amphetamine Type Stimulants (ATS) in the EU. The MicroMole project, which will run for three years, tackles this problem by monitoring sewage systems.

The main objective of the microMole project is to design and develop an autarkic sensor system – namely the microMole ring – that will track down the production of illicit substances by being installed in the sewage systems. The successful implementation of those sensor systems will reduce social harm linked to this criminal phenomenon, but also shall have a positive effect on environmental protection through curbing down the spillage of hazardous substances. The primary role of microMole however, is to aid law enforcement related to synthetic drug production. The sensor system will allow for the continuous examination of wastewater flow, keep track of the location and place where each sample was taken, in order to provide exhaustive information about the chemical sample to be potentially utilized as legal evidence. The prototype design, development and testing of a system for recording, retrieving and monitoring operations of synthetic drug laboratories in urban areas is the ultimate goal of the project group.

A physical and electrical integration of all sub-modules of the microMole sensor system is foreseen for bringing it into operation in a sewage system. The microMole prototype will contain the following features: a miniaturized system for sewage pipes, robust housing taking into account sewage system environment, minimized power consumption, enhanced operation time supported by thermoelectric energy harvesting, high-specificity electro-chemical sensors, ultra-low power analog to digital converter, integrated micro-tanks for sample storage, and secure GSM and radio communications for remote monitoring. Reliability tests will be performed to guarantee a non-biased development. Analysis of privacy law, data protection and social acceptance will be carried out at different stages.

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Technological innovations will be focused in the ASIC design of a optimized voltage converter for thermoelectric energy harvesting, ultra-low power analogtodigital converters for capacitive sensors with low input voltage and current. Moreover, a thermal path design between the thermoelectric generators and the sewage water system will be developed in order to increase the harvested energy. The development of a microfluidic system containing microchannels, a microvalve, microfilters, detection chamber and tanks for the analysis of sewage waste is also a key technological issue in microMole.

microMole is a joint effort of 11 consortium members: Warsaw University of Technology (Poland), Central Forensic Laboratory of the Police (Poland), Federal Criminal Police Office (Germany), Blue Technolgies (Poland), CapSenze (Sweden), JGK Tech-Pipeferret (Iceland), Fraunhofer Gesellschaft (Germany), Tilburg University (the Netherlands), Ghent University (Belgium), Université Claude Bernard (France), Universität der Bundeswehr (Germany). The successful proposal has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 653626.