European project SensHy a great success

Within the SensHy project, scientists and engineers from across Europe had joined forces to develop a new generation of laser based gas sensing systems for hydrocarbons. The SensHy project with partners from Germany, France, Poland, the United Kingdom and Sweden started in 2008 and was supported by 2.35 million euro funding from the European Commission as part of the EU 7th Framework programme.

Tunable Laser Absorption Spectroscopy (TLAS) is a particularly important technique for gas detection. It is critically dependent, however, on the availability of application-grade semiconductor lasers. Based on their respective fundamental transitions, many important hydrocarbons can be detected most sensitively in the 3.0-3.5µm wavelength range, in which no suitable semiconductor lasers for sensing were available before the SensHy project.

A new class of laser sources with performance formerly unattainable has been developed within SensHy in this important spectral region and is now made commercially available for TLAS applications for the first time by the consortium partner nanoplus GmbH. These innovative lasers will enable a new qualitative level of monitoring techniques based on TLAS. By addressing the fundamental transitions instead of presently used weaker overtone transitions, various hydrocarbons can be more easily distinguished and the sensitivity can be increased by several orders of magnitude, which also opens up entirely new fields of applications. Customers of nanoplus can now use their established know-how from existing gas measurement systems to develop new instruments for the detection of hydrocarbons.

Within the SensHy project, particularly challenging applications with significant market potential have already been investigated. Industrial partner Gas Measurement Instruments Ltd, one of the major suppliers of gas detection equipment to the gas distribution industry worldwide, investigated applications in methane and flammable gas sensing. Detecting methane gas is one of the most important and widest ranging of chemical measurements with particular relevance to safety monitoring. Industrial partner Siemens AB developed a system based on TLAS for sensing of hydrocarbons in industrial environments, focusing on two applications, namely detection of acetylene impurities in ethylene and propane impurities in propylene. Ethylene is the largest volume industrially produced organic material and propylene is the world's second largest petrochemical commodity. Efficient process control allows increased energy efficiency, improved product quality and pollutant reduction.

This success of the industrial partners in the various fields was only possible by the tremendous support of the academic SensHy partners at University of Würzburg (Germany), University Montpellier 2 (France) and Wroclaw University of Technology (Poland), laying the project foundation by growth and characterization of novel semiconductor structures.

The European level was essential for obtaining access to the range and quality of personnel, technical expertise and resources required to tackle the various research challenges of the project. SensHy created durable links between European industries and academia and will contribute to maintain European competitiveness at an industrial level, by bringing some of the major European component manufacture centers ahead of competition in important emerging markets.

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