

(Sensor sub-cluster)

Environment and health, including air and water quality, food safety and medicine, pose various challenges to achieve a sustainable development in Europe and worldwide. Collecting information on the status of the environment or the health of an individual is typically the first step to the desired improvement and, thus, sensors and instrumentation play a key role to address these challenges. In spite of considerable research efforts over the last decades, especially sensors to collect and evaluate (bio)chemical information are still not available for many applications, either due to lack of sensitivity, selectivity or stability (3S).

The Sensor sub-cluster will identify the technical or non-technical challenges of (bio)chemical sensing and highlight opportunities resulting from nanotechnology, microsystems integration, advanced data evaluation, their manufacturing, commercialization and systemic integration.

In order to respond this multifaceted-problem and to accelerate this type of industry in Europe, several EU leading scientists & companies has been invited to provide their opinion on most efficient and effective measures, which shall be launched on European dimension (either for EC programming and policy making, joint communication and dissemination events and other measures to support innovation, business planning and financing).

Among the discussed topics will be:

1. The role of transducer with internal signal referencing, internal integrity control, or controllable adjustment of affinity functions,
2. Calibration and remote (automated) operated sensors
3. New trends in SPR-imaging for engineered nanoparticles or biological (viruses, large proteins) or for development of new ultrasensitive bioanalytical assays,
4. Sensors in the context of dangerous molecules and or CBNRE detection,
5. Open access to research data for sensor-related projects,
6. Common research interest and cross-fertilization with EU projects on sensors, but also on characterization tools and modeling,
7. Multidisciplinary networking and specifically designed development projects to achieve disruptive solutions,
8. Wider participation of end-users for specification of parameters of novel sensors,
9. Importance of validation of sensors and systems in realistic scale for market acceptance.

The meeting will identify various pan-European and main national networks/clusters in sensor domain (e.g. COST Action TD1105 – EuNetAir, Nano4Water cluster, AMA Association for Sensors and Measurement, ETP Nanomedicine – diagnostics or MNBS Concentration and Consultation Workshops. The possible synergies with Sensor sub-cluster will be sought.

The results of the meeting shall formulate the Sensor sub-cluster objectives for short/medium and long term (technical and/or non-technical), should help to identify personnel leading such clustering activity and agree on necessary communication tools towards other possible participants and to the general public (e.g. website).

The anticipated speakers for the event:

- **Prof. Andreas Schütze (University of Saarland)** – Sensor systems for environment and health: challenges and opportunities
- **Prof. Dermot Diamond (Dublin City University)** - Challenges in autonomous environmental sensing
- **Prof. Vladimir M. Mirsky (Brandenburg University of Technology Cottbus)**
– Change of the paradigm: smart chemical sensors with additional integrated functions
- **Dr. Adriele Prina Mello (IMM/AMBER/CRANN-TCD)** - Challenges in sensors for health applications: the future of cancer diagnostics.
- **Dr. Michele Penza (ENEA)** – New Sensing Technologies for Environmental Sustainability in Smart Cities (COST Action TD1105 EuNetAir)
- **Olivier Martimort (NanoSense)** - Challenges for sensor industrialisation

(+ 1-2 speakers from relevant industries)