Innovative Sensor for the fast Analysis of Nanoparticles in selected Target Products - “Instant”

In recent years, nanotechnology was a hot topic in the scientific community due to the specific properties in the nanoscale and became an enabling technology for numerous applications. Especially engineered nanoparticles (ENP’s) have shown various beneficial properties. In many fields of applications, these ENP’s have left the scientific laboratories and made their way to consumer products. Beside their advantages, ENP’s are under discussion in the scientific community due to possible unforeseen hazards as well as an unknown disposition in living organisms and the environment.

Detection and identification of nanoparticles: The INSTANT device

- **The detection and identification of ENP’s** in cosmetic products, food and/or drinks require an efficient sample preparation and extraction of ENP’s from these complex matrices. INSTANT will develop an extraction protocol as generalised as possible.
- INSTANT analytical instrumentation will combine two complementary transduction principles—one optical and one electrochemical. Different types of recognition elements (RE’s) with complimentary selectivity for ENP’s
- Will be combined on an array, innovative technologies will be used for generating RE’s to distinguish between size, shape and material. The signal patterns obtained will be evaluated using chemometric techniques.
Main results of INSTANT as analytical integrated instrumentation.

- Concept for integration of all device units (sample preparation, optics and electrochemical sensors array based readout combined system, chemometrics)
- Optimally concept of integrated device housing with great functionality for operation procedures and maintenance works;
- Main sections and modules partitioning with transducers integration as combined system;
Automatic sample treatment device for retaining NPs developed.

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