
CSEM SA – Additive Manufacturing and Component Reliability sector

Innovative materials for advanced nanoelectronic components and systems

Short description:

Swiss Center for Electronics and Microtechnology (CSEM) focuses on the optimization and testing of a broad range of innovative materials for applications in advanced nanoelectronics, such as spintronics, neuromorphic, in-materio computing, multisensing, photonics, nano-mechanics, advanced ferroelectrics and biosensing. CSEM's competences include deep investigation of the materials' microstructure combined with comprehensive characterisation of the materials' functional properties. This combination allows to establish the structure-to-properties relationship for the improvement of the materials' performance.

Alongside with the development of novel materials, CSEM is also active in their heterogeneous integration. This enables design and development of systems that benefit from the combination of specific properties of various materials, thus providing a way for the considerable enhancement of the system's performance.

CSEM holds the state-of-the-art laboratory equipment for the characterisation of the materials' microstructure and functional electrical properties with a strong background and knowhow in investigation of the materials' structure-properties relationships. CSEM's research and development activities in this field were previously successfully demonstrated within multiple projects consortia (e.g., INREP EU project with the aim to develop and deploy valid and robust alternatives to indium (In) based transparent conductive electrode materials, <http://www.inrep.eu/>; ZEROAMP EU project with the aim to develop logic and memory circuits using NEM switches for emerging applications demanding zero standby power, operating at harsh condition, <https://www.zeroamp.eu/>).

Partnership / cooperation possibilities:

Our research and technology center is looking for partners active in the development and synthesis of novel materials for nanoelectronics. CSEM can contribute with characterisation and testing capabilities for the improvement and optimization of the properties of the developed materials.

CSEM is also looking for partners with new applications or system designs involving heterogeneous integration of the novel materials in the nanoelectronics domain. CSEM can contribute with the optimization of the system performance by microstructural analysis of the heterostructures and identification of the design's problem areas, including failure mode analysis.

Possible H2020 call:

HORIZON-CL4-2022-RESILIENCE-01-10: Innovative materials for advanced nanoelectronic components and systems

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