



Institut Matériaux Microélectronique Nanosciences Provence

Dr. L. OTTAVIANI
Laurent.Ottaviani@im2np.fr
+33 (0)6 28 27 25 52

Targeted (sub)topics

SU-INFRA01-2018-2019-2020: Prevention, detection, response and mitigation of combined physical and cyber threats to critical infrastructure in Europe

Silicon Carbide Detection Electronic System for improving Security of European Critical Infrastructures





PROTISVALOR EN CHIFFRES

Création en 2002
 Création d'une Cellule Europe dédiée en 2004
 Certification européenne en 2010
 180 salariés
 1000 contrats de recherche
 450 essais cliniques
 12 plateformes technologiques
 7 starts-up

Competencies

- Organisation competencies :



- Organisation experience in the European project : Co-manager of KIC InnoEnergy program I_SMART (2012-14, 11 partners) : Innovative Radiation Detection System for Selective Measurement in Harsh Media. Realization of a hybrid SiC mono-pixel system, able to detect fast/thermal neutrons up to $1E9$ n/cm²/s and 500 ° C.

- The skills you can bring :



Institut Matériaux Microélectronique
Nanosciences de Provence

*Expertise in mastering SiC-based neutron sensors for harsh environment (3 patents)
 Manufacturing, simulating and integration of components. Access to unique annealing facility, resulting in most shallow p⁺n SiC junctions reported in literature.*



Study and optimization of the ad hoc configuration, composition and structure of SiC-based particle detector for high fluxes of irradiation of thermal/fast neutrons.

Development of specific read-out electronics.

Test of the modules under specific irradiations (TRIGA).





Project idea

- *To develop a new type of radiation detection system – sensor + electronics - for counting and spectrometry of neutrons and gamma-ray fluxes, for use under harsh environment (up to $1E14$ n/cm²/s, 500° C) leading to the ability of identifying radiological sources (including nuclear materials).*
- *To provide new security solutions for the protection of critical infrastructures against many kinds of physical threats.*
- *List of the complementary skills you need for your consortium*
 - *Integration of the complete sensor system + prototyping – TRL 7*
 - *Qualification of the advanced prototype for safety applications (in the context of specific critical infrastructures) / Safety management*
 - *End-user of sensor system*