Horizon 2020
Marie Sklodowska Curie Actions
PROFILE FORM – Expression of Interest

Organization Name / Department	**Gerencia Investigación y Aplicaciones - GAIyANN**	**Organization Short Name**	CNEA
Organization Type	☐ University ☒ Public Research Centre ☐ Large Scale Enterprise ☐ Small and Medium Scale Enterprise	☐ Public Body ☐ International NGO ☐ National NGO	
Research Fields	☒ Chemistry **CHE** ☐ Social and Human Sciences **SOC** ☐ Economic Sciences **ECO** ☒ Information Science and Engineering **ENG** ☒ Environment and Geosciences **ENV** ☐ Life Sciences **LIF** ☒ Mathematics **MAT** ☒ Physics **PHY**	***Sub-Fields / Keywords:*** *Nuclear and Atomic Physics, Heavy Ion Physics using a 20UD Tandem accelerator facility, Condensed Mater Physics, Solar Energy Research and Developments, Medical and Environmental Applications of Accelerators.*	
Short Description of the Organization / Department	Our **Research and Applications Management** (**RAM**) depends of the major **Area of Management Research and Non-Nuclear Applications** (**AMRNNA**) of the **National Atomic Energy Commission** (**CNEA for the spanish spelling Comisión Nacional de Energía Atómica**). **Primary Responsibility is:** Research activities in Basic Sciences of Nuclear Technology and its Non-Nuclear Applications. **Actions: Promote, develop and maintain a scientific structure of excellence, qualified to produce technological innovations. Promote and realize the transfer of basic research to non-nuclear technological developments. Preserve knowledge in basic sciences of nuclear technology and its non-nuclear applications, including the training and continuous training of human resources. Relations with institutions, companies and other entities.**		
Previous Related Projects / Research Experience	The main activities of our **RAM** are: The maintenance and operation of the **20MV Tandem Accelerator TANDAR**, the developing of **Boron Neutron Capture Therapy** (BNCT) based on neutron sources accelerator technology. **Properties of materials and condensed matter**. Nanoscience and nanotechnology. **Solar energy**. Basic physics, nuclear physics and complex systems. The **RAM** is divided into six departments whose researchers are engaged in basic and applied research. The main research areas are: **1. Experimental nuclear physics and heavy ion physics**, mainly related to the use of the 20MV Tandem accelerator (TANDAR): elastic and fusion nuclear reactions, break-up of weakly bound projectiles, proton irradiation of electronic devices and accelerator mass spectrometry (AMS). **2. Condensed Matter Physics**, experimental involved the design and development of new materials (oxides, nano-materials, ceramics, thin films, etc.), Structural, morphological and thermal characterizations by: RX, TEM, SEM, AFM techniques, Physical Properties: Mossbauer, Raman and IR spectroscopy. Magnetic nanostructures and device and electrochemical energy conversion and storage systems. Theoretical studies cover the following topics: Electronic properties: Oxides, interfaces and surfaces. Nanoscopic systems. Materials for new electronic devices. Superconducting materials. Simulation and modeling of soft matter: Confined fluids and interfaces, nanochannels, monolayers and tapes, highly rotating gases Study of resistive memories. Characterization and modeling of materials for nuclear use: high entropy alloys, nuclear materials**. 3.** In the area of the **Solar Energy Research and Developments** the main		

	topics are: those activities related with photovoltaic solar energy conversion for space and terrestrial applications. **4.-**The research-department group dedicated to **Environmental and Applications of Accelerators** are currently developing a neutron sources based accelerator for Boron Neutron Capture Therapy as an important nuclear-medicine and biomedical applications. See a list of publications related to the above items through the years 2000-2016 in the following web site **http://www.tandar.cnea.gov.ar/actividades/2016/publicaciones.html** **or contact Dr. Guillermo V. Martí (see below) for further assistance.**
Short Description of the Project idea (if foreseeable)	**Related to 1.-** Project ideas will be associated with the Experimental and theoretical investigation of break-up reactions induced by weakly-bound proyectiles main 6,7Li an 9Be. Stable isotope discrimination with Accelerator Mass Spectrometry (AMS) combined with time-of -flight measurements ($^{235U-238}$U and $^{236U-238}$U) for safeguards and forensic control. **Relaled to 2.-** The main projects will be related to Laser ablation growth of oxides thin films with resistive memory properties. The Development and characterization of lithium materials for energy production. MeMOSat: Â memory resistive mechanisms for satellite applications. Development of devices based on the magneto caloric effect. First principles studies of materials with strong electronic correlations. Theoretical study of carbides, nitrides and actinides mixed oxides as possible nuclear fuel for Generation IV reactors. **Related to 3.-** Project ideas are: antireflective dielectric layers to be optimized for space solar cells applications, a continuation of a comprehensive study on the passivation effects of the InGaP layer on the GaAs solar AR layer thickness optimization, and single junction n–p Ge solar cells for terrestrial concentrator applications studied by numerical simulations. The effects of 10 MeV proton irradiation in concentrator lattice matched triple-junction solar cells GaInP/GaAs/Ge by numerical modeling wil also be addressed. **Related 4.-Development of Boron Neutron Capture Therapy based on Accelerators (AB-BNCT). Development of neutron sources based on accelerators.**
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