Hellenic Neutron Association (HENA)

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In Greece a neutron association (Hellenic Neutron Association - HENA) was established under the title *"Neutrons in Science and Technology"*. This encompasses scientists who use neutrons in their research field that includes, among others, neutron scattering techniques, neutron activation analysis, neutronic calculations, neutron radiation damage studies, neutron production and detection, neutron spectroscopy, or in use neutrons for bio-medical applications. They are scientists from disciplines such as condensed matter physics, chemistry, structural biology, material science and engineering, geology, archaeology, medical science and applied nuclear physics covering a rather wide breadth of topics including hydrogen storage materials, polymers, biomaterials, quantum materials and magnetism, materials for extreme environment, nuclear (fission and fusion) energy production, etc.

The Association brings together all the Greek scientists doing research using neutron based techniques. It aims at

- Expanding the use of neutron based techniques in the Greek scientific community
- To exploit the opportunities offered at European and International Level as well as to pursuit the optimum access and use of the European Large Scale Neutron Facilities
- To provide a platform for scientific information exchange and promote interdisciplinary relations
- Participating actively in the European scene and Large Scale Neutron Facilities
- To initiate/organize national, European or International collaborative activities and networks on neutron science
- To organize training, seminars, summer schools on neutron based techniques.

HENA has around 50-60 members who regularly use neutrons in their research. This number is based on a recent survey organized by the Greek representative in ENSA and on estimates from past membership registrations. A recent analysis (to be published), conducted by the European Neutron Scattering Association, on the scientific output of the European neutron science community, using Natural Language Processing and machine learning methods based on the Scopus database, showed that in the period 1964-2020 there are 592 unique authors in Greece in neutron relevant publications, with the number of new users increasing steadily over the last ten years to about 20 new users per year. The geographical distribution of the community in Greece in the form of heat maps showed that the neutron users community has spread significantly over the country the last years.

A series of newsletters has been issued since 2017 in an effort to bring the members of the neutron society closely together, inform them about relevant conferences, schools and events as well as better serve the aims of the association. The Editorial Board consists of the HENA representative in ENSA, one Greek scientist working abroad at a neutron source (TUM-FRM-II) and a professor from the Greek Academia with long expertise in neutron methods. Up to now nine newsletters have been issued. In these newsletters research highlights of the community members and also Greeks being active in neutron based techniques outside Greece are also presented.

Greece has currently no neutron source (the GR-R1 research reactor ceased operation in 2004) and is not a member or partner country of any neutron source. Moreover, the Greek government does not provide any financial tools for the access to neutron sources. Therefore the Greek community relies 100% on the European transnational access programs. Greek users' access to large scale neutron facilities and funding of transnational access is crucial for the scientific advancement of the community. There have been efforts in the past to join ILL or ISIS or ESS. In this direction workshops have been organized and discussions with the policy makers had been initiated without any outcome.

The scientific fields the HENA members serve are quite diverse and taking into account the small number of the community this does not help to have a significant critical mass and an impact for Greece to become a member of a large neutron source.

However, it is positive that a young generation of scientists using neutrons in their research is being developed through seminars showing the role of neutron as a tool to probe matter, the newsletter that is being issued, the participation of MSc and PhD students in neutron schools, etc.