

Guest Editorial

Neutron Radiography Conference

THE neutron has been a very intriguing particle since its discovery in 1932. It is necessary for nuclear stability, but it is not stable when free. The total removal cross section of a neutron beam is not a continuous function of either the atomic or the mass number of the target matter. It is the origin and the essential vehicle for such a peculiar process as nuclear fission. There is still a lot of research work to be done to explore its properties in full. However, historically it became synonymous with the atomic bomb and the nuclear reactor, thus making it highly unpopular even among many scientists. Of course, given its importance, ignoring it is not a realistic approach.

The exploitation of the neutron's peculiar properties (in particular, its lack of electromagnetic interaction with matter) is far from completed in spite of the huge research and technological work already done. The scope of COST Action 524 was in this main stream. Imaging techniques based on neutron sources are a large research area capable of valuable results in several fields. In particular their unprecedented ability to perform nondestructive testing of new materials under normal use is still unique. The main achievement of the Action has undoubtedly been the net-

working among all the European Centers working on this topic in 11 countries, making a more efficient use of existing knowledge and infrastructure possible. At the same time, the Action was a catalyst for further cooperation with other countries.

The Seventh World Conference on Neutron Radiography (WCNR) was the final step of five years work of the COST Action 524: Neutron imaging techniques for the detection of defects in materials. Although limited in size, participation in the conference was at a high level, with a remarkable fraction of researchers coming from areas outside Europe, the United States, and Japan, which have traditionally done most of the work in this area. We personally hope this trend will continue in the next years to increase the number of institutions and countries working on this topic and to demonstrate that new ideas and technologies can be developed where access to large facilities is still difficult. As members of the Institute, we are confident that the publication of the present issue containing selected papers from the conference will be an efficient tool in this direction due to the worldwide distribution of "our" IEEE TRANSACTIONS ON NUCLEAR SCIENCE.

Digital Object Identifier 10.1109/TNS.2005.846827

PIERO CHIRCO, *Guest Editor*
ROBERTO ROSA, *Guest Editor*