Contribution ID: **2** Type: **Talk**

STUDIES ON REFLECTOR MATERIALS FOR COLD NEUTRONS

Neutron scattering techniques and neutron applications in general are powerful and well established tools for research in science and technology. However the tremendous potential of neutrons as a probe of matter or as a research object by itself is limited by the relatively low flux intensity of the neutron sources, as compared with photon sources. In addition, the different processes (production, slowing-down) and devices (moderators, transport systems, collimators, energy-selectors, detectors, etc.) reduce by several orders of magnitude the actual neutron intensity that eventually conveys the experimental information of interest. One of the research lines devoted to reduce part of those loses has been oriented to the search for efficient reflector materials, that may improve the efficiency of guiding surfaces or the actual reflection of neutrons on a containment walls to minimize their leakage. A large body of work has been done in the past, particularly concerning the interaction of slow neutrons with diamond nanoparticles. It has been demonstrated the high reflectivity of this material for UCN and VCN, and proposed that such capacity extends at higher neutron energies, thus bridging the reflectivity gap in the neutron spectrum [1, 2]. In this work we present calculations aimed at evaluating the performance of other materials that seem to behave as very efficient reflector for neutrons over the CN range, as compared with diamond nanoparticles.

[1] E.V. Lychagin et al., Nuclear Instruments and Methods in Physics Research A 611 (2009) 302–305
[2] V. Nesvizhevsky et al., Carbon 130 (2018) 799e805

Poster back-up

Primary author: Prof. GRANADA, Rolando (Argentine Atomic Energy Commission)

Presenter: Prof. GRANADA, Rolando (Argentine Atomic Energy Commission)

Session Classification: Talks

Track Classification: Moderators & Reflectors