



The Neutron Scattering Society of America

www.neutronsattering.org

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Paul Langan
Spallation Neutron Source
Oak Ridge National Laboratory

Dear Paul,

The Neutron Scattering Society of America (NSSA) strongly endorses the proposal put forth by the Oak Ridge National Laboratory to increase the neutron flux on the first target station at the Spallation Neutron Source (SNS), and commonly referred to as the Proton Power Upgrade (PPU) project. On behalf of the community of neutron users at neutron beam facilities in the United States, the NSSA wishes to emphasize the high priority the PPU project has for the future and vitality of neutron scattering.

Neutrons are an essential probe for matter, having paved the way for historical discoveries in science. Neutron scattering is a key scientific tool providing unique capabilities for characterizing the structure and dynamics of advanced materials, and in particular for studying soft matter (including biological complexes for diagnostics and therapeutics), complex fluids, magnetic materials, thin films, and disordered and aperiodic structures. Neutrons do not suffer from strong Z dependent scattering cross sections, thus enabling studies of hydrogenous materials that are key to many energy technologies. Neutron scattering is also important for progress in the manufacture of advanced materials, since neutrons penetrate complex apparatus and can examine materials under processing conditions. World leading neutron science capabilities are therefore paramount for the U.S. to maintain its leadership role in the study and development of new materials, which is needed to ensure economic competitiveness and enable innovation.

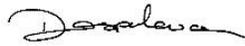
With more than 1500 active members in the NSSA drawn from academia, industry and government laboratories, our research interests and achievements cover a broad range of basic and applied science. The United States played an essential, formative role in the invention of neutron science techniques for materials research in the 1940s and 50s, beginning with the work of Walter Zinn at Argonne National Laboratory and Ernie Wollan at Oak Ridge National Laboratory. Later pioneering work was duly recognized with awarding of the 1994 Nobel Prize for Physics to Clifford Shull in 1994. The NSSA is very proud to carry forward in this tradition.

On behalf of the neutron scattering community, the NSSA is fully supportive of the PPU project given the many benefits that it will bring to the SNS and

considering the technological and operating accomplishments of the Hg target. This speaks to the readiness of the SNS to undertake on this new project. The number of users has grown significantly in the 10 years the first target station has been operational, the number of proposed experiments has equally grown and the oversubscription rate runs between 300 and 400 %. These are clear trends in the right direction. The increase in peak brightness and higher neutron flux will significantly enhance scientific productivity. The experimental conditions that will be realized with the PPU will enable cutting edge experiments due to better time resolution, faster scanning speeds, and access to slower dynamics, to mention a few capabilities to be enabled.

It is difficult not to compare the only remaining spallation neutron source in the U.S. with the many light sources around the country. Neutrons are expensive to produce and the facilities are costly to maintain. Thus the community is faced with a difficult decision regarding the investment size of the PPU. The unique contributions of neutrons to discovery due to their strong penetration, excellent energy match to elementary excitations, sensitivity to light elements, their magnetic moment and sensitivity to magnetic environments make them very complimentary to other BES facilities. The significant decrease in the number of DOE-funded neutron scattering facilities in the U.S. over the last decade, despite the continued growth of the country's neutron scattering user base, and in the face of significant new investments in neutron scattering in Europe and Asia make funding the PPU project an urgent matter. The continued competitiveness of the U.S. in materials research therefore depends, at least in part, on increased access to neutron scattering facilities. The PPU will make progress toward this end by providing significantly increased throughput at the SNS.

Sincerely yours,



Despina Louca
President of NSSA