NEUP Nuclear Energy University Program
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Commissioning of an easyXAFS to Enable Understanding of Short Order Structure in Nuclear Materials

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ABSTRACT:

This proposal requests funds to commission a laboratory-based X-ray absorption spectroscopy (XAS) system. Specifically, we are requesting funds to acquire an easyXAFS system. XAS is one of the most powerful characterization techniques available for experimentally revealing the local chemical and coordination/bonding environment of materials. The easyXAFS system will enable us to understand the local structure of nuclear materials without having to access the synchrotron based facilities. This facility along with existing characterization infrastructure at UNR will allow for complete characterization of nuclear materials. Up to 33% of the time on the facility will be dedicated for external users. Innovative laboratory modules will be created showcasing the use of the easyXAFS. We estimate 80 undergraduate and graduate students, and researchers will be trained on the use of easyXAFS and analyses of data at UNR.

The impact of such infrastructure is immense considering that there is no such infrastructure currently available in the country. Overall, this facility will bring more value to DOE NE campaign by providing users with an alternative access to XAS through the NSUF rather than synchrotron.