Contribution ID: **18** Type: **not specified**

# Photon Stimulated Desorption Beamline at NSLSII

*Wednesday, 17 April 2024 13:55 (25 minutes)*

Understanding the expected gas desorption of an accelerator is critical in the proper design of accelerator vacuum systems and can have a major impact on the machine design and cost. From some of the earliest work on the subject for the Cambridge Electron Accelerator up through and including LHC, desorption measurements have played an important role in predicting vacuum behavior of large accelerators susceptible to synchrotron radiation. Much of this early work served well the machines they applied to and other machines with similar parameters and material choices. But as machines continue to be developed with higher energy and beam current, other novel materials are investigated to improve vacuum, while at the same time reducing Secondary Electron Yield to suppress e-cloud. Part of these investigations require careful study of their desorption yields. This would benefit future upgrades to the existing NSLS-II facility as well as other synchrotrons facilities. Additionally, such a beamline could have a major impact on the selection and validation of proposed materials and components for EIC, including possible coatings for the electron storage ring, IRs (Interaction Regions) and the beam screen of the Hadron/Ion ring. Desorption rates of these newly proposed materials would be used as inputs to advanced modeling tools such as Molflow and SynRad for accurate predictions of vacuum behavior. A beamline at NSLS-II, dedicated to the PSD/ESD study of novel and proposed vacuum materials has been constructed and commissioned to advance further research into desorption behavior. The PSD of stainless steel and OFHC copper to be used for the Rapid Cycling Synchrotron of EIC have been measured and compared to prior work to baseline the system, with plans to evaluate the NEG coated chambers for the EIC electron storage ring. The layout of the experimental line and the commissioning measurements will be presented.

## Summary

**Primary authors:** Mr HETZEL, Charles (Brookhaven National Laboratory); TODD, Robert; Mr SALEH, Ibrahim (Brookhaven National Laboratory); JUNI FERREIRA, Marcelo (European Spallation Source ERIC); Mr SEEGITZ, Michael (Brookhaven National Laboratory); Dr TCHOUBAR, Oleg (Brookhaven National Laboratory); Mr PALECEK, Paul (Brookhaven National Laboratory); Dr HULBERT, Steven (Brookhaven National Laboratory); Dr SHAFTAN, Timur (Brookhaven National Laboratory)

**Presenter:** TODD, Robert

**Session Classification:** Session 4