Contribution ID: **167** Type: **Poster**

Oxygen dosing systems for Diamond Optics.

Tuesday 19 June 2018 18:00 (20 minutes)

Diamond Light Source is the UK's national synchrotron light source. Carbon contamination of optics in the synchrotron's associated beamlines by the disassociation of carbon from carbon monoxide and dioxide at optics surfaces under radiation can lead to a substantial drop of beam intensities and unwanted spectral features. Diamond Light Source has developed, and deployed on several beamlines, an oxygen dosing system to protect sensitive beamline optics from carbon contamination. The mechanism appears to involve synchrotron-light-induced re-oxidation of the newly formed surface carbon and subsequent re-desorption as carbon monoxide or dioxide. Although this technique works to stop the formation of a carbon film it does not clean already-contaminated surfaces; as such it must be used consistently from day one of operations.

This poster shows the design and development of the oxygen dosing tools as well as discussing the operation of them along with observations of the effectiveness of the technique.

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Session Classification: Poster Session Tuesday

Track Classification: Vacuum in Accelerators