Contribution ID: **528** Contribution code: **SUP032** Type: **Poster Presentation**

THz Detection and Investigation of Vacuum-Compatible Optical Components

Sunday 10 August 2025 15:00 (3 hours)

Detecting terahertz (THz) radiation in ultra-high vacuum (UHV) environments presents notable challenges due to the limited availability of commercially compatible components. In preparation for upcoming THz measurements at the Argonne Wakefield Accelerator (AWA) facility, we investigated two critical aspects: (1) the THz transmission characteristics of fused silica windows, and (2) the suitability of commercial off-axis parabolic mirrors (OAPs) for use in UHV conditions. While fused silica is widely used in optical systems, its performance in the THz regime is rarely documented. We present transmission measurements and assess its viability for THz diagnostics. Additionally, we address the incompatibility of anodized, off-the-shelf OAPs with UHV by developing and testing both mechanical and chemical de-anodization techniques. These methods aim to maintain surface integrity and optical quality. This work provides practical guidelines and compatibility benchmarks for implementing THz diagnostics in UHV environments and serves as a reference for future experiments at AWA and other accelerator facilities.

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

Yes

Footnotes

Funding Agency

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I have read and accept the Privacy Policy Statement

Yes

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