

Abstract Submitted  
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**High-Energy X-ray Absorption Diagnostics as an Experimental Combustion Technique**<sup>1</sup> JARED DUNNMON, SADAF SOBHANI, WALDO HINSHAW, REBECCA FAHRIG, MATTHIAS IHME, Stanford University — X-ray diagnostics such as X-ray Computed Tomography (XCT) have recently been utilized for measurement of scalar concentration fields in gas-phase flow phenomena. In this study, we apply high-energy X-ray absorption techniques to visualize a laboratory-scale flame via fluoroscopic measurements by using krypton as a radiodense tracer media. Advantages of X-ray absorption diagnostics in a combustion context, including application to optically inaccessible environments and lack of ambient photon interference, are demonstrated. Analysis methods and metrics for extracting physical insights from these data are presented. The accuracy of the diagnostic is assessed via comparison to known results from canonical flame configurations, and the potential for further applications is discussed.

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