

Abstract Submitted
for the TS4CF08 Meeting of
The American Physical Society

Index of Refraction of Y_2O_3 in the Extreme Ultraviolet¹ JOSEPH MUHLESTEIN², Brigham Young University — In applications such as measuring ionized He in the Earth's magnetosphere, it can be useful to be able to detect the relatively weak 30.4 nm line of He^+ over the stronger 58.4 nm line of neutral He. Work done previously at BYU has calculated that an aluminum/ Y_2O_3 multilayer mirror should be effective at maximizing reflectance at 30.4 nm while minimizing the 58.4 nm line. We have measured the index of refraction of Y_2O_3 to improve the accuracy of these calculations and further our knowledge of Y_2O_3 between the wavelengths of 5 nm and 30 nm. We created a sample mirror using electron beam evaporation and measurements were taken using the Advanced Light Source at the Lawrence Berkeley National Laboratory. As this is the first direct measurement of the index of Y_2O_3 in this regime, it represents an improvement over previous data calculated using atomic scattering factors.

¹Supported by the National Science Foundation (grant number: PHY-0552795) and the Brigham Young University Physics Department

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Date submitted: 16 Sep 2008

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