

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Comparison of polycapillary and curved crystal optics for convergent beam powder x-ray diffraction**<sup>1</sup> AYHAN BINGOBALI, WEI ZHOU, CAROLYN MACDONALD, University at Albany, SUNY — Comparisons were made of diffracted ring width, ring uniformity, system resolution and diffracted beam intensity for convergent beam powder diffraction using two different types of x-rays optics, doubly curved crystal optics<sup>2</sup> and polycapillary x-ray optics.<sup>3,4</sup> Measurements were made using very low power microfocus sources for small inorganic and organic standard samples. Detailed source and optics characterizations were performed to develop comparisons with theoretical calculations. Resolution and intensity were in good agreement with those obtained from simple geometrical calculations.

<sup>2</sup>Z. W. Chen, N. Mail, F.Z. Wei, C. A. MacDonald, W. M. Gibson “Total reflection x-ray fluorescence with low power sources coupled to doubly curved crystal optics,” *Spectrochimica. Acta. B*, 60 (4), pp.471-8, 2005.

<sup>3</sup>C.A. MacDonald and W.M. Gibson, “Applications and Advances In Polycapillary Optics”, *X-ray Spectrometry*, **32** (3), 2003, pp 258-268.

<sup>4</sup>C.A. MacDonald, S.M. Owens, and W.M. Gibson, “Polycapillary X-Ray Optics for Microdiffraction,” *Journal of Applied Crystallography*, **32**, pp160-7, 1999.

<sup>1</sup>This work was supported by the Breast Cancer Research Program

Carolyn MacDonald  
University at Albany, SUNY

Date submitted: 05 Dec 2005

Electronic form version 1.4