Spherical Optics Stress Analysis*

ABSTRACT

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The X-ray Topography system is an excellent instrument to use when testing the suitability of X-ray optics. Recently, this technique has been successfully adapted to the more difficult process of producing and characterizing high-quality concave diffractive optics (Patent: ANL-IN-10-081). For elastically formed optics, the component must have uniform surface stress so that its application may be useful in processes like x-ray diffraction. Topographic stresses analyzed include fabrication stresses, mounting stresses, and stresses due to crystal bending. This paper describes a novel method for spherical crystal bending and concurrent topographic evaluation.

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