

Abstract Submitted  
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**Development of Carbon Nanotube Based Isotropic X-ray Source for Cone-Beam Tomography Imaging** ZEJIAN LIU, YUEH LEE, GUANG YANG, JIAN ZHANG, JIANPING LU, OTTO ZHOU, University of North Carolina at Chapel Hill — We have developed a carbon nanotube based microfocus X-ray source with an isotropic focal spot. Two focusing electrodes were implemented in the design with one electrode harnessing the divergence of field-emitted electrons from gate and the other focusing electrons onto the anode. Isotropic X-ray focal spot was achieved by utilizing an elliptical cathode that forms elliptical electron probe on the anode after electrostatic focusing. Based on the design method, an x-ray source with an isotropic focal spot of  $65\ \mu\text{m}$  in diameter was experimentally demonstrated in X-ray projection images. This type of X-ray source sees wide applications in cone-beam tomography imaging studies.

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