

The fabrication and the characterization of next generation X-ray tube based on aligned CNT fibers

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Abstract

Carbon nanotubes (CNTs) have attracted much interest as promising materials for field emission due to their excellent electrical, thermal and mechanical properties. Many fabrication methods for emitter were proposed including metal tip coated by CNT paste, CNT sheet fabricated by the filtration and CNT crystal tips made by CVD method. However, those methods are not suitable for the mass production because of fabrication time, exfoliation and so on. We prepare well aligned CNT emitters with CNT fiber from the direct spinning method, and studied their emission properties. The glass and ceramic X-ray tube of small size were made and characterized. Both soft and hard X-ray were generated with the same tube according to the voltage, and the ionizing ability was examined including the elimination of static electricity and the electrostatic precipitation. Especially the elimination of hazardous air pollutants(HAPs) was tested including PM, VOCs, SO_x and NO_x.

Keywords: *X-ray, CNT, XNT Fiber, Cold Cathode,*

Biography

Gihm Se Hoon received his Ph.D degree at MSE, Seoul National University(2009). His major is the structural analysis using X-ray and computer simulation methods. He worked as an application scientist at Bruker AXS Korea especially SAXS fields, and he developed a SAXS equipment, TVXA-ENIF1 by himself at Techvalley. In 2018 he found a tech startup, aweXome Ray Inc. and developed next generation X-ray tube based on CNT fiber.