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Uniform field emission on ink-jet printed CNT emitters through oxygen trimming

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Recently, field emission emitters made by carbon nanotubes(CNTs) and ink-jet method have been extensively studied due to their low cost, little limitation of size and a high resolution. When CNT emitters are operated, a few highly protruded ones generate most of the emission currents that cause spatial nonuniformity. In this study, we applied selective oxidation to solve this problem on ink-jet printed CNT emitters. Consequently, O2 exposures to field emitting CNT arrays give rise to a permanent damage selectively on the highly emitting CNTs. In spite of turn-on field increase, emission images was showed remarkably uniform after oxygen trimming.