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Flexible Field Emission Devices[1] SUNNY SETHI, ALI DHINOJWALA, THE UNIVERSITY OF AKRON TEAM — We report synthesis of flexible field emission devices using patterned and non-patterned vertically aligned carbon nanotube arrays and use of such devices to induce phosphorescence. Carbon nanotube is known to have excellent electron emitting properties. On macroscopic scale, emission current density is much less than that for a single nanotube for reasons like screening effect and non uniform emission. Here, we report a very unique way to fabricate flexible field emission devices using partially entrapped aligned nanotubes in an elastomer as cathode. Using this process not only helps in fabricating a flexible geometry but also helps in the reduction of screening effect, thus increasing the emission efficiency. Emission current for these devices was studied with respect to the area and total perimeter for patterned nanotubes. These studies help to understanding the mechanism to translate nanoscopic emission to a macroscopic scale.

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