

Abstract Submitted  
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**Horizontally-aligned carbon nanotube films with nanotube diameter controlled by growth temperature**<sup>1</sup> ALI ALMAQWASHI, JOSH KEVEK, ETHAN MINOT, Oregon State University — Chemical vapor deposition (CVD) growth of carbon nanotubes (CNTs) on quartz substrates yields dense, horizontally aligned CNTs which are ideally suited for manufacturing electronic devices. We have examined the role of growth temperature in this CVD process using 0.15 nm thick iron catalyst on ST-cut quartz. Diameter and wall number of aligned CNTs were characterized by AFM imaging using a range of tapping forces [1]. We find that as growth temperature is reduced from 900 C to 800 C the average CNT diameter (measured at low tapping force) drops from 2.6 nm to 1.1 nm and the fraction of single walled CNTs increases from 45% to 80%. We observed no significant variation of CNT density as growth temperature was varied from 800 C to 900 C. [1] DeBorde, Leyden, Joiner & Minot, Nano Letters 8, 3568 (2008)

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