

Field Emission from Carbon Nanotubes

Rudy Resch

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1. Introduction
 - (a) Carbon Nanotubes
 - (b) Field Emission
 - i. Light emission
 - (c) Experiments
2. Field emission properties
 - (a) Fowler-Nordheim
 - (b) Distance dependence
 - (c) Field enhancement factor
 - (d) Light emission
3. Field emission enhanced scanning probe microscopy
 - (a) Topografiner
 - (b) Z-resolution
 - i. DC measurements
 - ii. Enhancements due to lock-in and mechanical effects (amplitude modulations)
 - A. AFM Cantilever resonance
 - B. Theory of amplitude modulations
 - iii. Enhancements due to frequency modulations (PLL, etc)
 - A. Theory of frequency modulations
 - B. Simulations
 - (c) XY-resolution of measuring topography
 - i. Simulations
 - ii. Scanning over a step
 - iii. Scanning over grating
 - (d) Mode shape of membrane resonator
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 - (a) Using field emission
 - i. Down-mixing frequency
 - (b) Using light emission
 - (c) Self-oscillation of CNT
5. Device Fabrication
 - (a) Pick-up of CNT using AFM cantilever
 - (b) On-chip devices

Chapter 1

Introduction

Testing testing