SELF-ORGANIZED NI NANODOTS FOR CARBON NANOTUBES GROWTH BY ATMOSPHERIC PLASMA. K. Yurchenko[1], K. Diwan[1], A. Wagner[1], I. Levchenko[2], K. Ostrikov[2,3], D. Mariotti[1]
[1]*Department of Microelectronic Engineering, Rochester Institute of Technology, Rochester (NY), USA*
[2]*Plasma Nanoscience, School of Physics, The University of Sydney, Sydney, Australia*
[3]*CSIRO Materials Science and Engineering, Lindfield, Australia*

A realistic industrial application of carbon nanotubes (CNTs) to future nanoelectronic and energy harvesting devices highly depends on the ability of controlling the growth process and demands for low-cost nanomanufacturing techniques. Some of our work aims to improve both the CNT growth process via controlled distribution of Ni catalysts and at the same time we are studying the possibility to grow CNTs with low-cost processes that employ atmospheric plasmas.

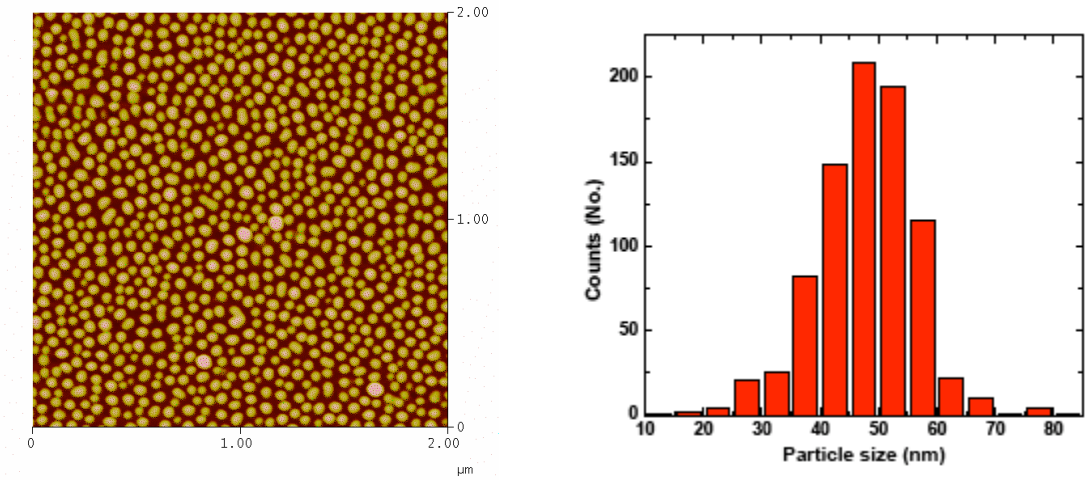

Figure 1. AFM image (left) and size distribution (right) of Ni-nanodots produced by RF plasma sputtering

In this contribution we present our initial findings on the production of Ni catalyst nanoparticles that can self-organize in uniformly distributed patterns. Although work still needs to be done in order to control adequately the formation of Ni nanodots, the results are encouraging. Our experimental results supported by computer simulations show that plasma interaction with the substrate can favor the self-organization mechanisms. Recent efforts and progress on the development of an atmospheric plasma system will also be briefly reported.