Homework #2 10.02.2020 — Paper Review

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2.5. DC Conductivity (1)

A material's ability to conduct electrical current is a useful property for nano-characterization techniques. The successful implementation of most carbon nano-devices depends on the development of nano-scale characterization and analysis techniques. Since the development of AFM, it is possible to detect regions of magnetic and electrical forces that interact within the sample. Current electrical nano-characterization techniques allow the use of conventional AFM hardware to detect electrical events. The integration of AFM and electrical characterization enable the development of tools that provide additional information about electrical parameters, such as high-resolution local measurements of resistance and conductivity within integrated circuits. (2) Electrical conductivity is a simple yet helpful property that opens a wide variety of AFM types for electrical characterization such as Scanning Spreading Resistance Microscopy (SSRM), Conductive Atomic Force Microscopy (c-AFM), Scanning Capacitance Microscopy (SCM), Scanning Impedance Microscopy (SIM). Hence, it is imperative to classify the various AFM variations as the extensive amount of combinations opens a window for the invention of new nano-characterization techniques. (2)

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