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Low Energy Dissipation Nano Device Research JENNY YU, Cal Poly - Pomona — The development of research on energy dissipation has been rapid in energy efficient area. Nano-material power FET is operated as an RF power amplifier, the transport is ballistic, noise is limited and power dissipation is minimized. The goal is Green-save energy by developing the Graphene and carbon nantube microwave and high performance devices. Higher performing RF amplifiers can have multiple impacts on broadly field, for example communication equipment, (such as mobile phone and RADAR); higher power density and lower power dissipation will improve spectral efficiency which translates into higher system level bandwidth and capacity for communications equipment. Thus, fundamental studies of power handling capabilities of new RF (nano)technologies can have broad, sweeping impact. Because it is critical to maximizing the power handling ability of grephene and carbon nanotube FET, the initial task focuses on measuring and understanding the mechanism of electrical breakdown. We aim specifically to determine how the breakdown voltage in graphene and nanotubes is related to the source-drain spacing, electrode material and thickness, and substrate, and thus develop reliable statistics on the breakdown mechanism and probability.

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