

Abstract Submitted
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Hypergolic fuel detection using Single Walled Nanotube Networks SHARVIL DESAI, Dept. of Physics and Electrical and Computer Engg., University of Louisville, Louisville, KY, KAPILA HEWAPARAKRAMA, Dept. of Physics, University of Louisville, Louisville, KY, GAMINI SUMANASEKERA, Dept. of Physics and Electrical and Computer Engg., University of Louisville, Louisville, KY — Reliable and accurate detection of hypergolic fuels is vital to U. S. Missile Defense Agency. In this research a simple and highly sensitive SWNT network sensor was developed for real time monitoring of hydrazine leaks to ppm level concentrations. Upon exposure to hydrazine vapor, the resistance of n-type (after degassing) nanotubes is observed to decrease rapidly. The response time exhibits a linear dependence on the concentrations of the vapor. It was also found that the resistance of the sample can be recovered by pumping on the sample and exposing to UV light. The experimental results support chemical adsorption of hydrazine on SWNTs. Theoretical results of hydrazine-SWNT interaction [1] are compared with the experimental observations. Results of similar study on ammonia, dimethyl hydrazine, and naphthalene will also be presented. [1] Min Yu, C. S. Jayanthi, Shi-Yu Wu, APS 2008

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