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A Novel Automated System for Assembling Films of Nanoparticles EDNA CARDENAS, Sandia National Laboratories, STEPHEN HOWELL, SHAWN DIRK, DAVE WHEELER, Sandia National Laboratories, MICRO-TOTAL-ANALYTICAL SYSTEMS TEAM — Due to their interesting properties, nanoparticle films have emerged as useful platforms for miniaturized chemical sensing. For nanoparticle sensors to become practical in real world applications, a reproducible method of assembly has to be implemented. This project focuses on robotic assembly techniques that deposit nanoparticle films on various substrates. We have developed a process to iteratively assemble and electronically characterize nanoparticle films using a custom robotic preparation system. The robot's design uses commercially available pneumatic and electronic actuators, valves and regulators to manage precision movements. Control of the robot is obtained by a custom Labview program which uses a TTL and GPIB interface to control relays, power supplies, and measurement circuitry. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under contract DE-AC04-94AL85000.

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