

Abstract Submitted
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Low-cost Flexible Memristor Fabrication¹ INNA KIRILYUK, NADINE GERGEL-HACKETT, Mary Baldwin College — Memristors are two-terminal electronic devices that exhibit unique electrical characteristics, including nonvolatile electrical switching between resistive states. These unique electrical characteristics may enable the use of memristors as logic and/or memory components in novel computer architectures. Flexible memristors have been shown to not only exhibit the electrical characteristics unique to the devices, but are also operable after 4,000 flexes, require voltages less than 10 V, show on:off ratios >10,000:1, are nonvolatile for up to 14 days, and are fabricated at room-temperature with sol-gel solution processing. To increase accessibility to the technology and decrease production costs, we are developing methods of flexible memristor fabrication that are low-cost compared to current conventional fabrication. This low-cost fabrication includes exploring alternative materials and processes for device contacts, synthesizing and storing titanium dioxide sol-gel using standard wet chemistry tools without the use of a glove box, and using a low-cost spinner to spin sol-gel onto devices. The fabrication is performed entirely in an undergraduate lab setting by undergraduate students.

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