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Rewritable superconducting nanostructures at the $LaAlO_3$/ $SrTiO_3$ interface[1] DANIELA F. BOGORIN, CHENG CEN, JEREMY LEVY, University of Pittsburgh — We describe efforts to control the superconducting-insulator transition in $LaAlO_3$/ $SrTiO_3$ using a conducting AFM writing technique.[2,3] Low temperature superconductivity of nanowires created at the 2DEG has been observed, corresponding to carrier densities $\approx 5x10^{13}$ cm^{-2}. The ability control superconductivity in this fashion paves the way for new classes of superconducting devices. Support from DAPRA Seedling (W911NF-09-10258) and ARO MURI (W911NF-08-1-0317) and NHMFL is gratefully acknowledged.

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[2]C. Cen, S. Thiel, K. E. Andersen, C. S. Hellberg, J. Mannhart, and J. Levy, Nature Materials **7**, 2136 (2008).
[3]C. Cen, S. Thiel, J. Mannhart, and J. Levy, Science **323**, 1026 (2009).

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