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New method for the controlled creation of sub-15 nm aluminum nanowires to probe the 1D superconductor-insulator transition TYLER MORGAN-WALL, HANNAH HUGHES, NIK HARTMAN, TYRELL MCQUEEN, NINA MARKOVIC, Johns Hopkins University — We have developed a new method for the creation of sub-15 nm aluminum nanostructures using a sodium bicarbonate solution. Using PMMA masks patterned with e-beam lithography, we can controllably etch lithographically-produced nanostructures while measuring their resistances in-situ using a 4-probe measurement. This technique allows for precise control over the final resistance and thus can be used to create a wide variety of nanodevices. In particular, this technique allows for the creation of nanowires to probe the superconductor-insulator transition in 1D.

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