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Characterization of superinductors fabricated by a reactive evaporation of TiN RAYMOND MENCIA, YEN-HSIANG LIN, VLADIMIR MANUCHARYAN, University of Maryland - College Park — A superinductance is a circuit element whose broadband microwave impedance reaches the scale of resistance quantum $h/4e^2 \sim 6.5\text{k}\Omega$. Here we report an approach of fabricating such circuit elements by a reactive e-beam evaporation of TiN. We use deposition pressure and film thickness to tune TiN film close to a superconductor-insulator transition. Our films have kinetic inductance orders of magnitude higher than the geometric one with the critical temperature being above $\sim 2\text{K}$. Material analysis revealed that the enhanced kinetic inductance is linked to oxygen incorporation. We present DC and microwave characterization of TiN fabricated using our new method combined with a lift-off process.

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