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Correlation between Tc and roughness in Nb/Mo superlattices[1]
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— We have studied the superconducting properties of Nb/Mo superlattices grown by RF sputtering at different temperatures. Both Mo and Nb are elemental superconductors, with opposite behavior of the critical temperature as a function of disorder. The critical temperature of Nb decreases as it disorders, while the critical temperature of Molybdenum increases as it becomes amorphous. In superlattices the disorder is imposed by the growth process within each layer and by the period of the structure. We varied the superlattice period between 2 nm and 45 nm and control the intrinsic disorder by the substrate temperature. The samples were characterized by X-Ray reflectivity, X-Ray diffraction, electrical transport, and magnetization measurements. The behavior of the critical temperature as a function of the period shows two different regimes, depending on whether the crystallite size is imposed by the structure or by the growth temperature, *i.e.* if the grains are larger or smaller than the period of the structure. Furthermore, we will show a correlation between the critical temperature and the interface roughness.

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