Fabrication and Characterization of Nano-Scale Al/AlO_X/Al Josephson Junctions

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We report the fabrication and characterization of nano-scale Al/AlO_X/Al Josephson junctions, whose fabrication process was derived from electron beam lithography and double angle evaporation technique. We measured current-voltage characteristics at various temperatures and obtained temperature dependence of the critical current for the nano-scale Al/AlO_X/Al Josephson junctions. To estimate the effects of oxidation conditions on the AlO_X barrier, we also studied the dependence of the junction critical current on the product of oxygen pressure and time.

keywords : nano-scale Al junction, Josephson junction