INVITED

MgB_2 Thin Film Josephson Junctions and SQUIDs

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We have made medium T_c MgB_2/Ag/MgB_2 Josephson junctions using a step-edge technique. The junction process requires single layer post annealed MgB_2 thin film and the patterning is performed using standard photolithography and ion beam etching. Junction area was ion mill cleaned, and then *in-situ* deposition of Ag was performed. All the samples without Ag layer showed open circuit behavior. The junctions show a well defined supercurrent up to 27 K, and the current-voltage(I-V) characteristics show nice RSJ(resistiviely shunted junction) behavior. The critical current(I_c) of the junctions are strongly modulated by applied microwave irradiation and magnetic field. The I_c and R_n values of the single junction at 4.2 K are 0.7 mA and 1.8 Ω respectively. dc SQUIDs have been fabricated and show the expected periodic voltage modulation in a magnetic field up to 25 K.

keywords : MgB_2, Thin Film, SNS, Josephson junction, SQUID