## Abstract Submitted for the MAR07 Meeting of The American Physical Society

Zero-Bias Conductance Peak in Al/AlOx/Sc Tunnel Junctions SHENG-SHIUAN YEH, JUHN-JONG LIN, Institute of Physics, National Chiao Tung University, Hsinchu 30010, Taiwan — We have fabricated a series of  $Al/AlO_x/Sc$  tunnel junctions and measured the differential conductances at low temperatures. 25-nm thick Al (99.999%) stripes were first thermally evaporated onto a glass substrate, followed by glow discharge under an  $O_2$  atmosphere, to form a thin insulating AlO<sub>x</sub> layer. Subsequently, a 60-nm thick Sc (99.99%) film was thermally evaporated across the oxidized Al stripes to form tunnel junctions of 1  $mm \times 1 mm$ . Lock-in techniques were used to measure the differential conductances dI/dV(G) of the junctions. Zero-bias conductance peaks were found in all the tunnel junctions. In particular, the magnitudes of the zero-bias conductance peaks reveal a  $-\ln T$  dependence below about 30 K, which could be attributed to the electron-magnetic impurities interactions according to the theory of Appelbaum. However, the magnetic field has only a small effect on the conductance peaks. An asymmetric term in G(V) was observed, which is strongly temperature dependent and magnetic-field insensitive. Possible explanations will be discussed.

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