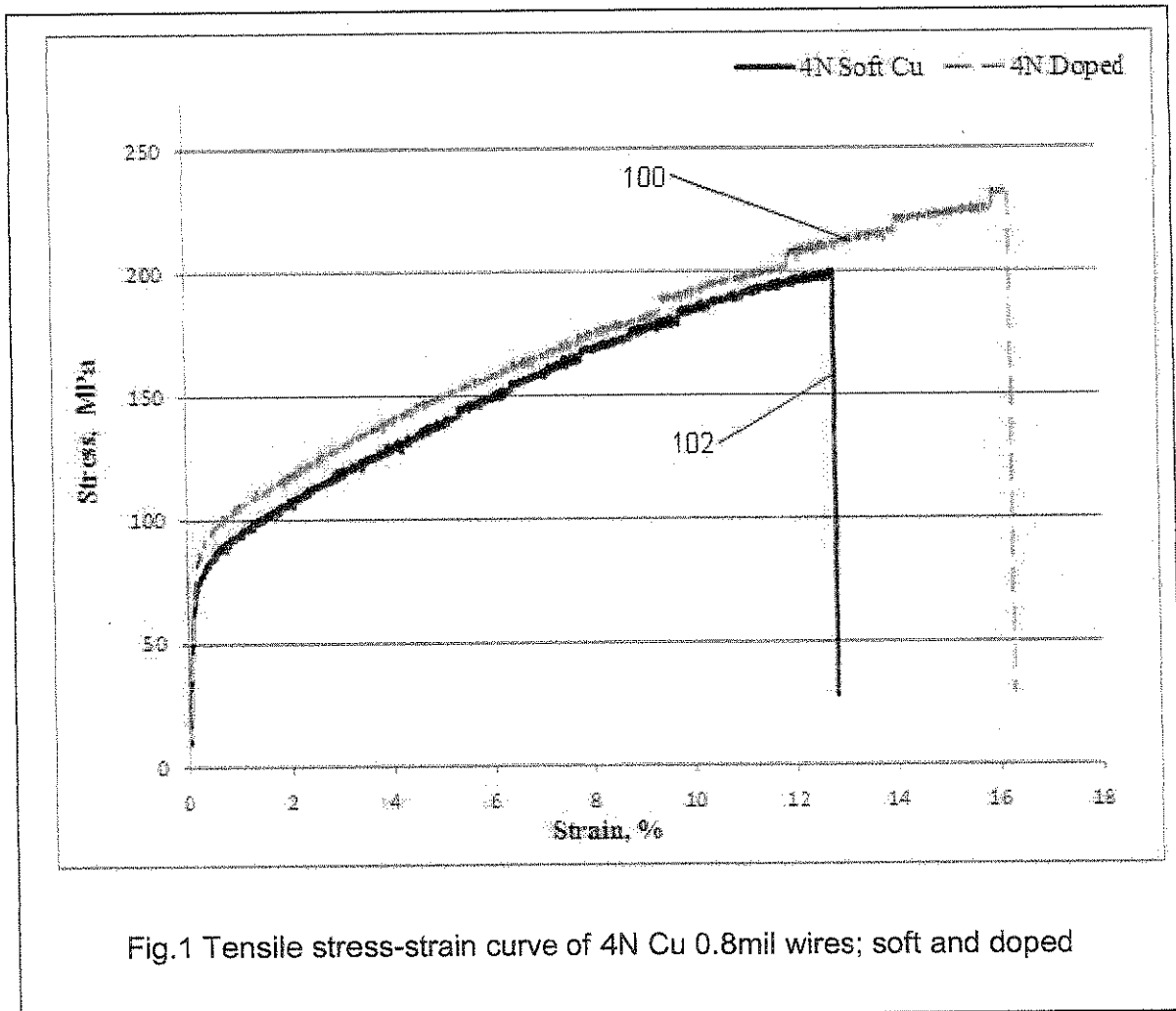




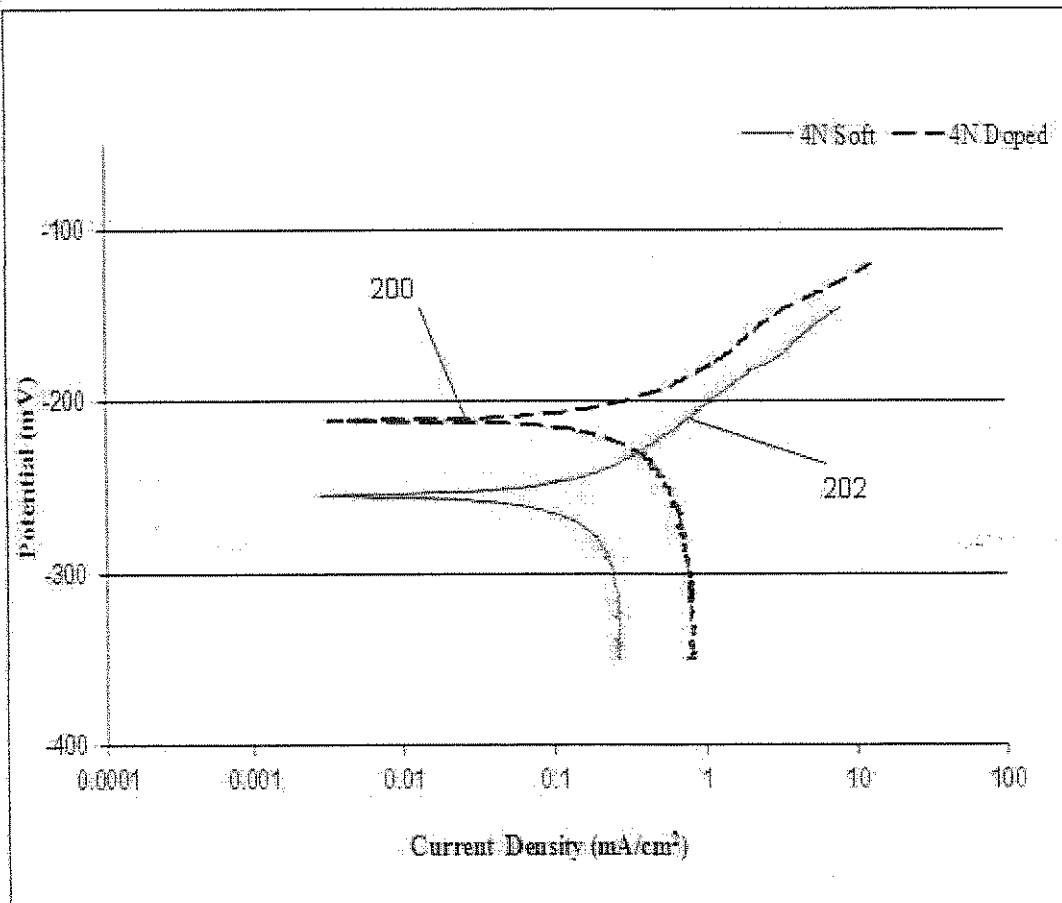


Fig.2 Polarization scan of 4N Cu wires; soft and doped

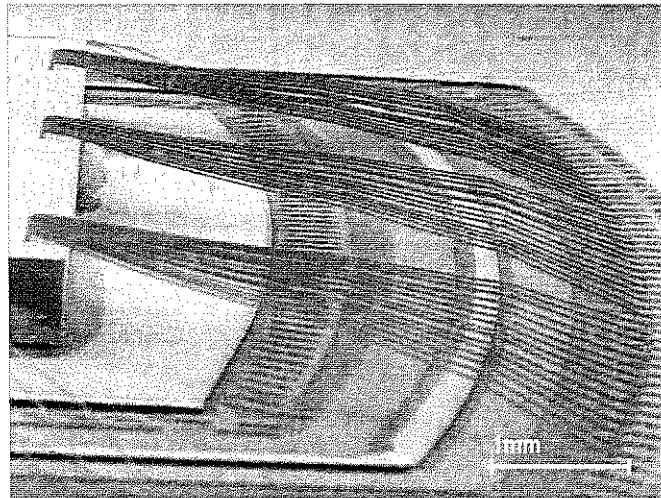


Fig 3(a) – Loop bonds of 4N doped Cu 0.8mil wire



Fig 3(b) – Ball bond of 4N doped Cu 0.8mil wire

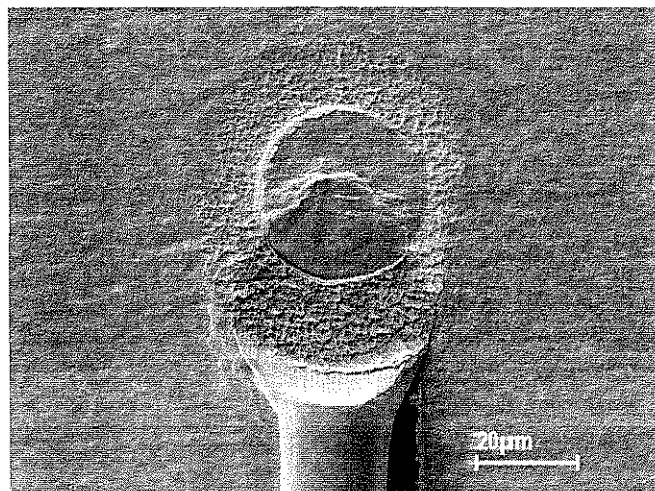


Fig 3(c) – Stitch bond of 4N doped Cu 0.8mil wire

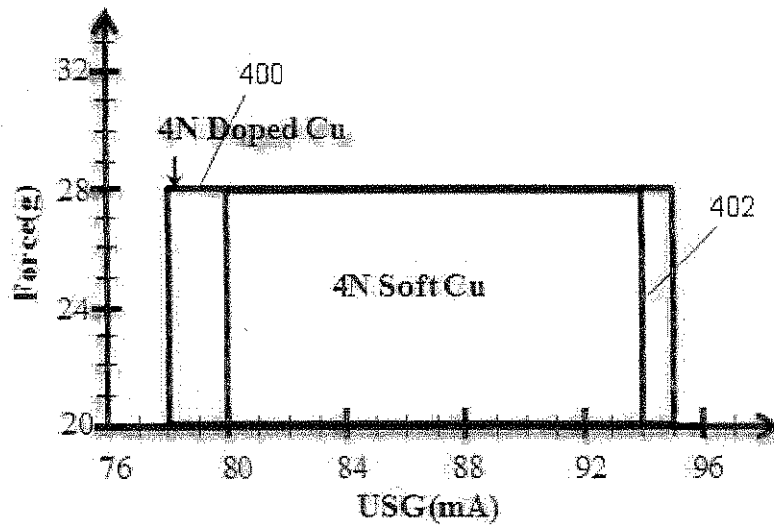


Fig 4(a) - Ball Bond Process Window

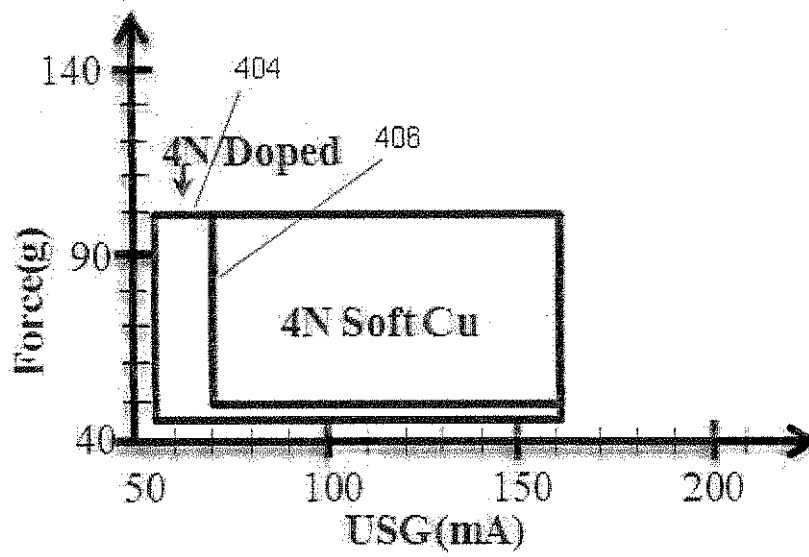


Fig 4(b) - Stitch Bond Process Window

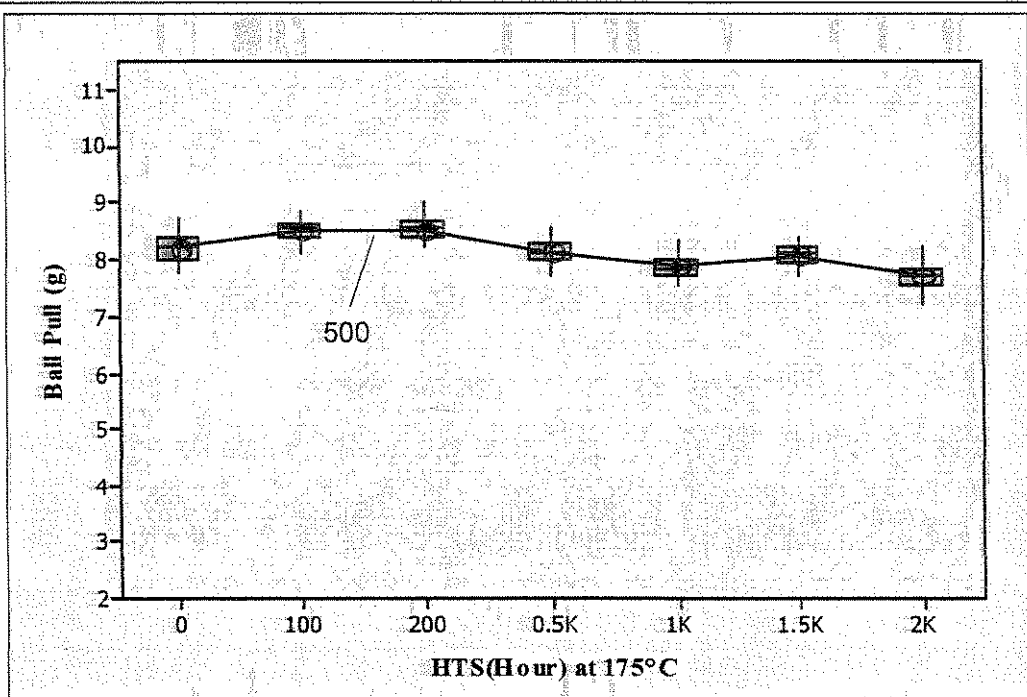


Fig 5(a) - Thermal aged 4N soft Cu 0.8mil wires

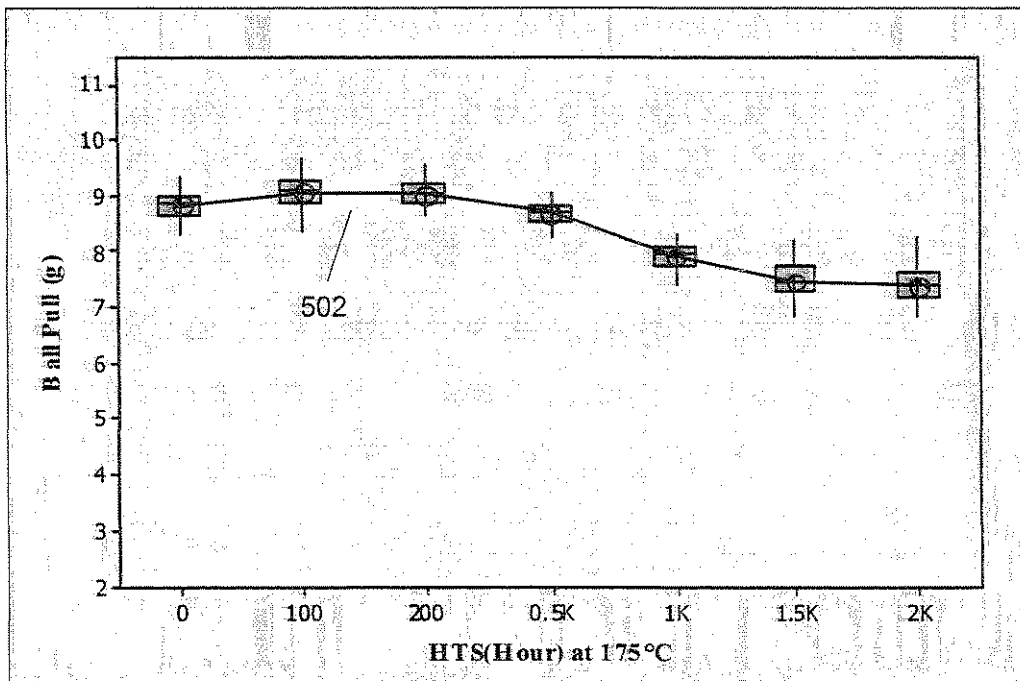
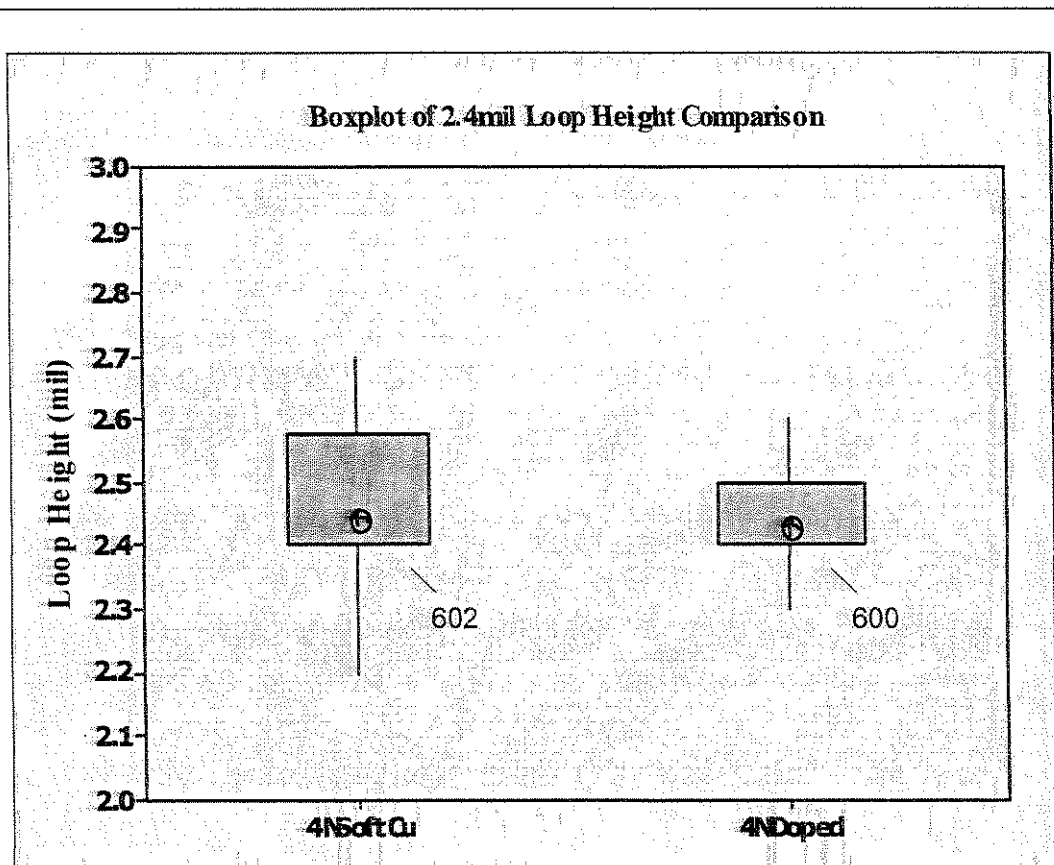
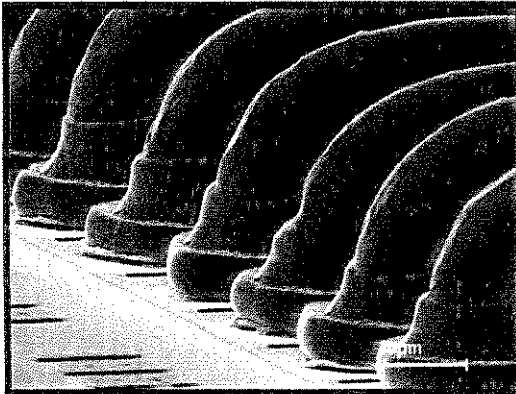


Fig 5(b) - Thermal aged 4N doped Cu 0.8mil wires



(a)



(b)



(c)

Fig 6 - Ultra low loop comparison of 4N Cu 0.8mil wires; soft and doped