Supplementary Electronic Information

1. EDX associated with HRTEM of the nano ZnO sample before and after coating with Sb, Bi and Co

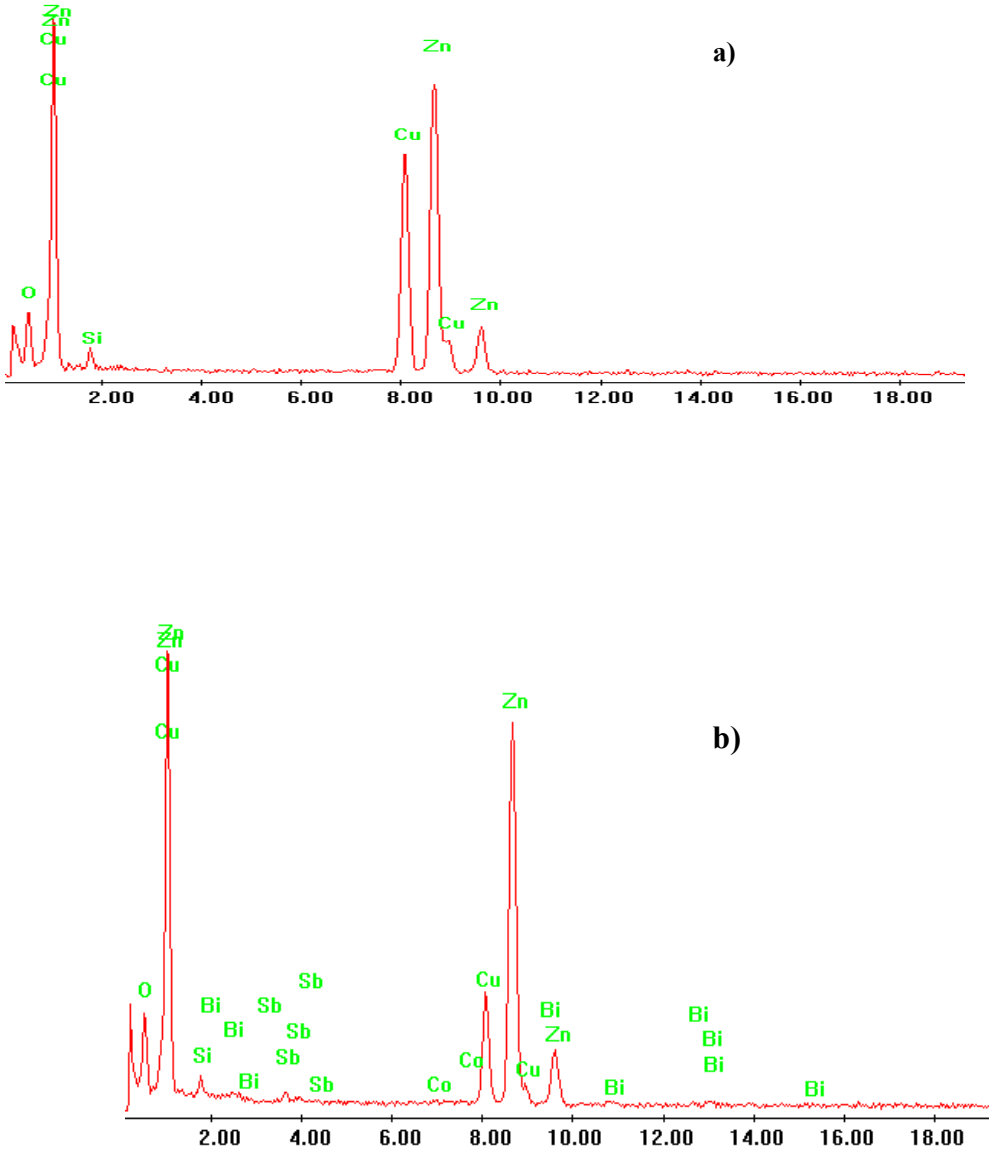

Fig 1. EDX spectrum of a) ZnO nanoparticles before coating and b) ZnO nanoparticles coated with (Sb, Bi and Co) oxides (Cu signal is from the Cu grid)

2. HRTEM and EDX associated with HRTEM of the varistor powder calcined at 300 °C after the addition of all the dopants (Sb, Bi ,Co, Ni, Cr, Al and Mn)

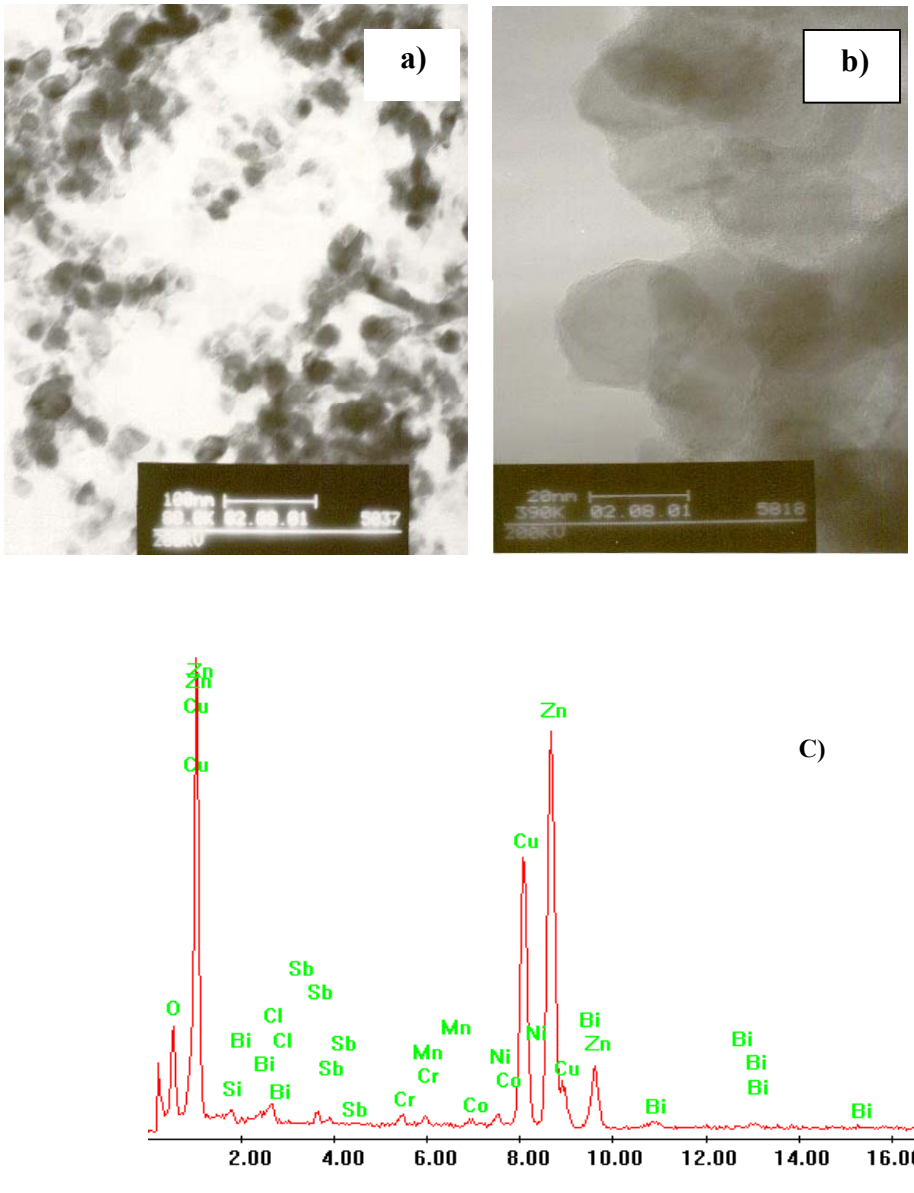

Fig. 2 HRTEM and EDX of core-shell varistor powder calcined at 300° C a) HRTEM at magnification 88,000 b) HRTEM at magnification 390,000 c) EDX analysis of the dried varistor powder

3. EDX associated with FESEM of the of the core-shell varistor sample sintered at 1050 °C

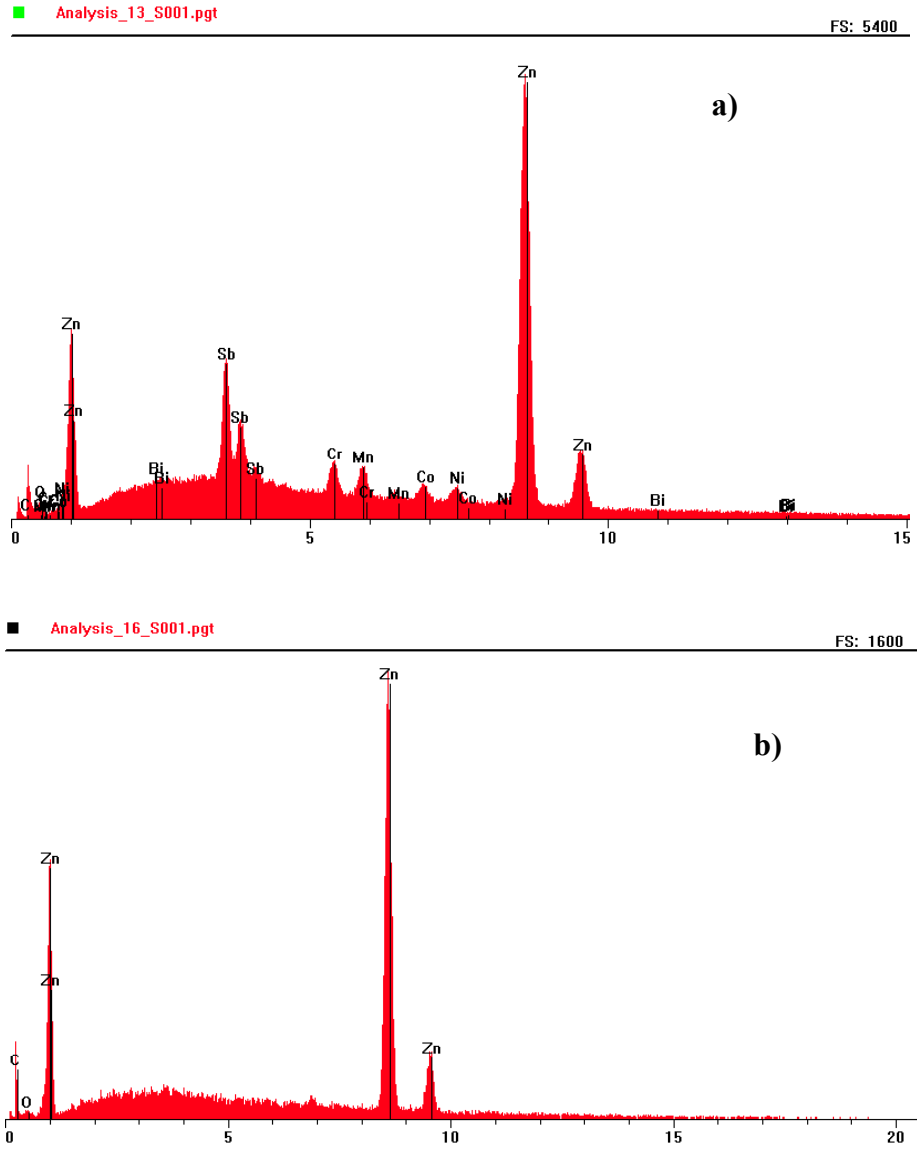

Fig 3. of the of the core-shell varistor sample sintered at 1050 °C
a) Intergranular region b) ZnO grains