Supplementary Material (ESI) for Journal of Materials Chemistry

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Supporting Electronic Information

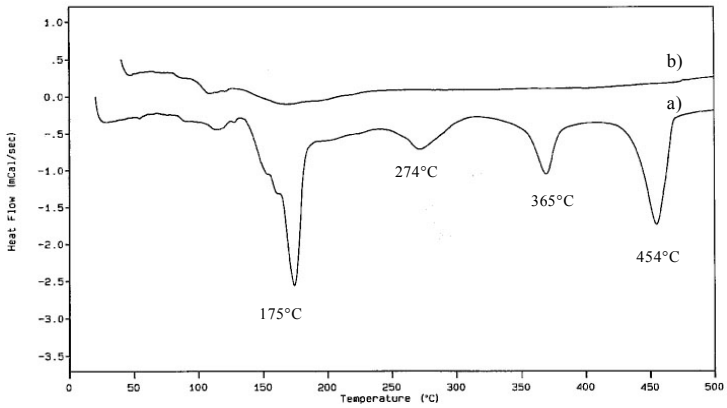

Fig. S1 DSC pattern of xerogel, dried at 80 °C, prepared by sol gel mixed precursor route a) first scan b) second scan

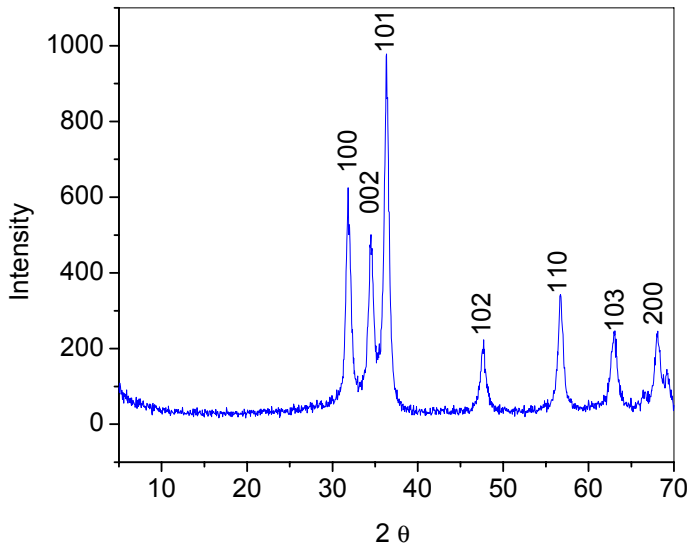

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Fig. S2 XRD pattern of ZnO varistor nanoparticles prepared by MPR method and calcined at 500 °C.

Table S1 Electron diffraction data for ZnO varistor nanoparticles prepared by sol gel mixed precursor route

R (mm) Error ± 5%	$d = \frac{\lambda L}{R}$ (Å)	*hkl*
9.5	2.52	002
11.5	2.08	102
14.5	1.65	110
17.0	1.44	103

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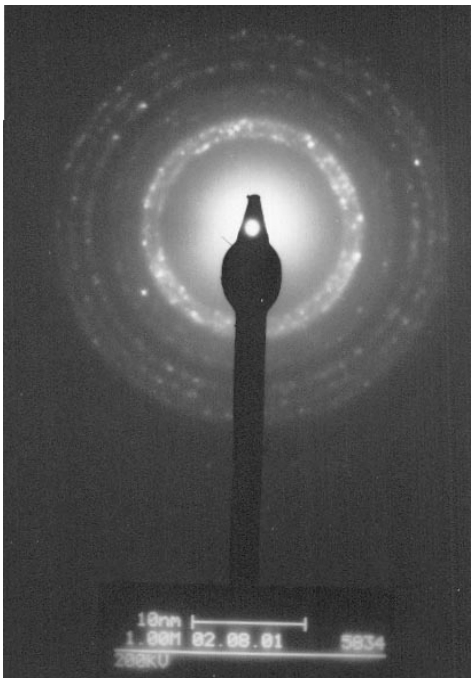

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Fig. S3 SAED pattern of ZnO varistor nanoparticles prepared by sol gel mixed precursor route.

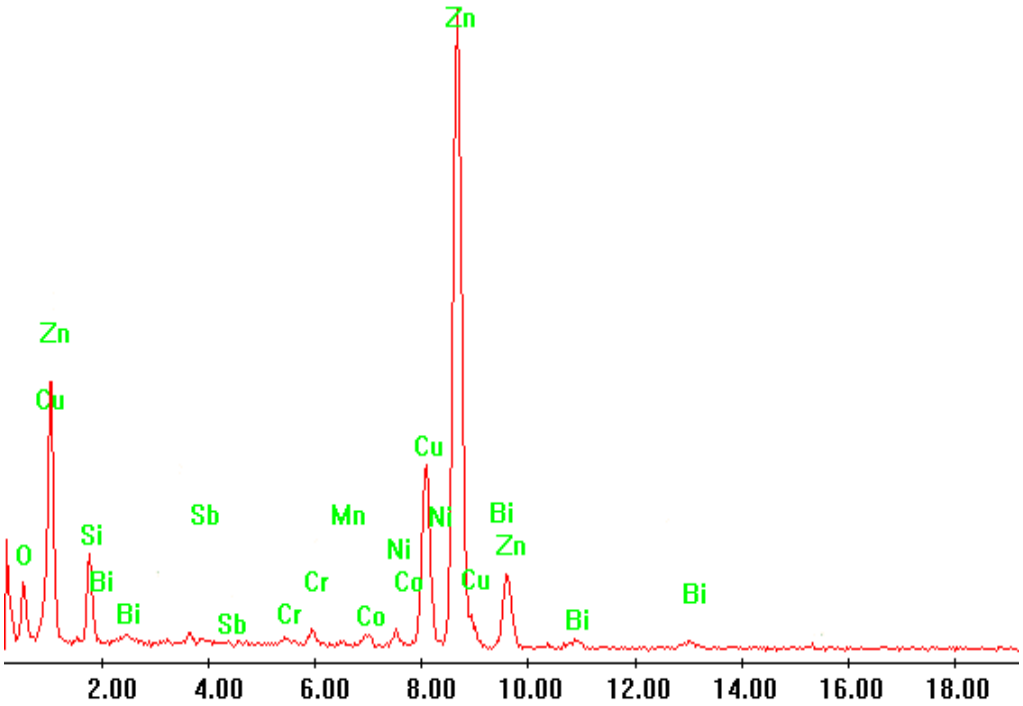

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Fig. S4. EDX pattern of ZnO varistor nanoparticles calcined at 500°C

(Cu and Si peaks are from the polymer coated Cu grids)

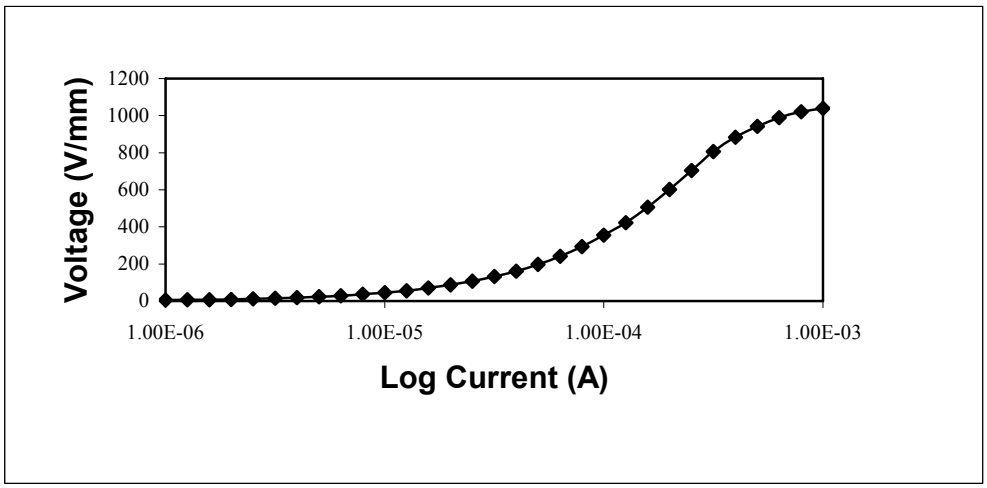

Fig. S5 I-V curve of 1050°C sintered varistor samples prepared with solid-state reaction.

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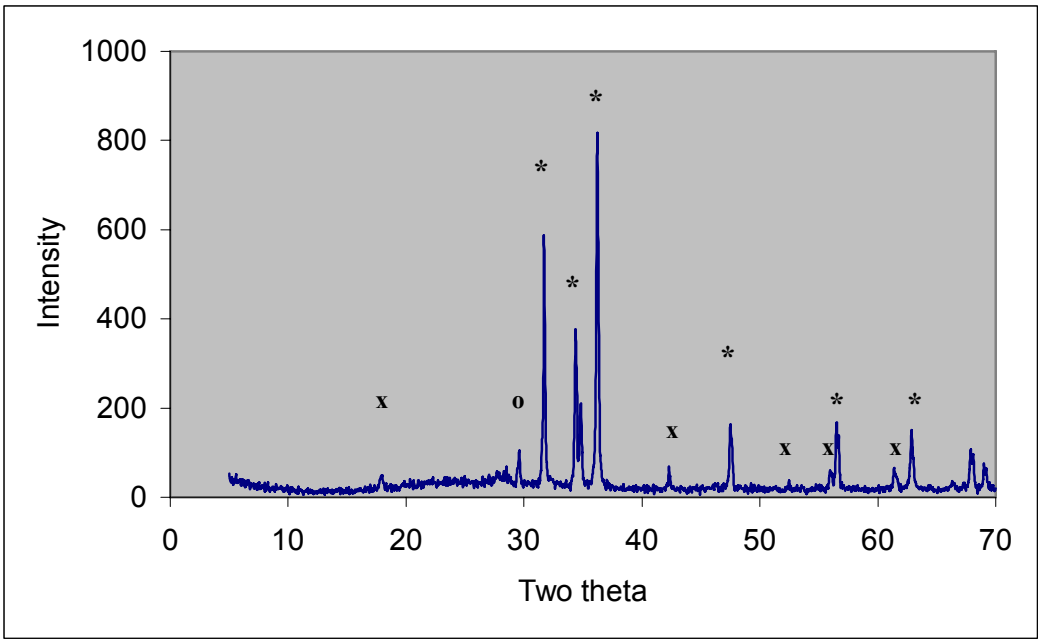

SI

Fig. S6 XRD of the standard (commercial sample) sintered at 1050°C/2h

(* = ZnO; x = $Zn_7Sb_2O_{12}$; o = Bi_2O_3)

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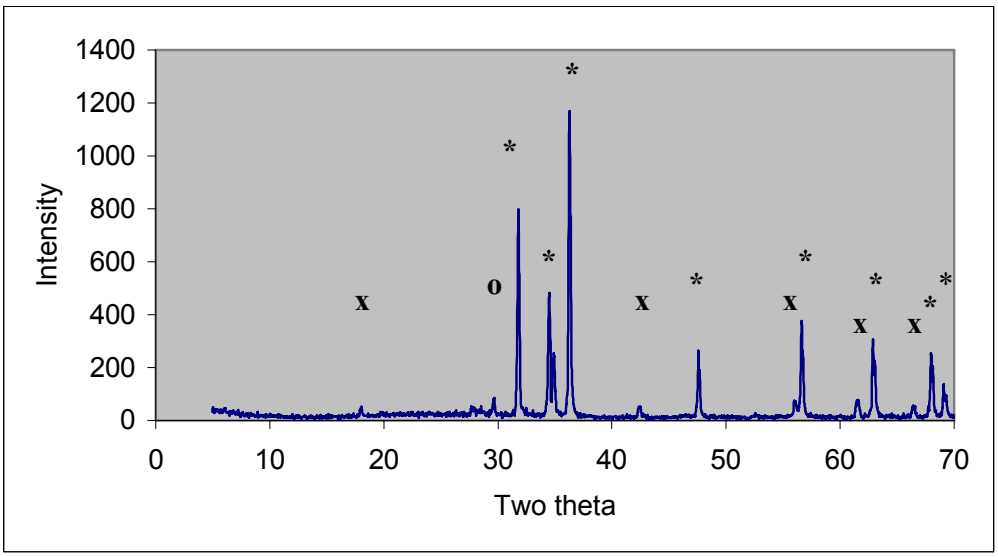

Fig. S7 XRD of the standard (commercial sample) sintered at 1050°C/2h

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Table S2 Electrical characteristics and densification of varistor samples prepared by sol gel mixed precursor route sintered at 950°C/2hr

Sample	Break down voltage (V/mm) ± 30	Density (g/cm^3)	% Density
Commercial varistor	946	4.77	85.1
Nano varistor	1450	5.32	94.9

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Table S3 Electrical characteristics and densification of varistor samples prepared by sol gel mixed precursor route sintered at 1000°C/ 2 h.

Sample	Break down voltage (V/mm) ± 30	Density (g/cm^3)	% Density
Commercial varistor	584	5.31	94.7
Nano varistor	951	5.48	97.8

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