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## **“Conductive probe based investigations on ZnO varistor ceramics”**

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Varistors are non-linear, voltage dependent resistors. Due to this property they are used as over-voltage protection in electric circuits and electronic devices. The special electrical behavior is caused by the formation of so-called double Schottky barriers at the ZnO grain boundaries. Therefore, the determination of the electrical properties of individual grain boundaries is crucial for an insight in the behavior of varistor devices. This talk reports of the electrical properties of individual grain boundaries. The results were obtained on the one hand by variants of atomic force microscopy (AFM) with Conductive Atomic Force Microscopy (C-AFM), Kelvin Probe Force Microscopy (KPFM) and Scanning Surface Potential Microscopy (SSPM) and on the other hand by a new micro four-point probe (M4PP) measurement setup. This combination of methods yielded a further insight in the electrical properties of individual varistor grain boundaries, where strong differences in properties and asymmetric behavior were found.