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## THE BALLISTIC ELECTRON EMISSION MICROSCOPY

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Ballistic Electron Emission Microscopy (BEEM) is a technique, based on scanning tunneling microscopy, which allows the study of potential steps at interfaces with high lateral resolution. In this respect, especially metal/semiconductor junctions are of great technical interest, and a good understanding of their electronic and structural properties, in particular of the potential barrier at the interface (the Schottky barrier height), is needed. A large variety of techniques, such as current- voltage measurements or photoelectron spectroscopy, has been used to investigate these properties, but most of them either show a lack of spatial resolution or are too surface sensitive. BEEM however provides an alternative approach for the investigation of buried interfaces with nanometer resolution of the junction up to a metal substrate thickness of around 100 - 300Å .

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## REMARKABLE THERMAL STABILITY OF CONDUCTIVITY OF POLYANILINE/MCM-41 COMPOSITE

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Polyaniline (PANI) has been synthesized in mesoporous silica MCM-41 by in situ polymerization method. Before the polymerization, MCM-41 was functionalized with sulfonic acid in order to increase interfacial interaction between PANI and MCM-41. Aniline hydrochloric acid salt solution was sorbed into MCM-41 loaded with sulfonic acid. Oxidative polymerization was achieved by addition an aqueous solution of peroxydisulfate on the loaded MCM-41. Structure and properties of the conducting polymer composite samples were characterized by X-ray diffraction (XRD), Fourier Transform Infrared (FTIR), UV–Vis, thermogravimetric analysis (TGA) and Four Point Probe for conductivity measurement. It is revealed that although conductivity measurement shows that conductivity of PANI was reduced after addition of MCM-41, its thermal stability of conductivity was significantly enhanced and demonstrated the desirability and efficacy of this polymer-mesoporous silica MCM-41 composite system in relatively high temperature applications.