# Normalization of work function of a conducting tip for electrical scanning probe microscopy (ESPM)

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Electrical scanning probe microscopy (ESPM), techniques utilizing conducting cantilever based on an atomic force microscope, may play an essential role in next-generation electronics since it exhibits its unique capability in detecting very local information on electrical or electronic properties of target sample including materials or devices. Furthermore the scanning capability of ESPM enables us to detect not only functional properties of a sample surface but also its 3-D structure.
One of the most attractive applications in ESPM is Kelvin probe force microscopy which can detect surface potential of thin film. The surface potential is a key parameter to elucidate the electron or hole transportation mechanism in the most electronic devices so far developed as they consist of multilayers on a conducting substrate. However, its application is limited due to the lack of reproducibility and reliability in KPFM measurement. In this presentation we are going to exhibit how to normalize KPFM data. Also several exemplary cases will be presented for further development of KPFM as a qualitative tool.