STEVENS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

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Recent progress in novel AFM imaging techniques and nanostructured microcantilever sensors

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Microcantilevers have been used for atomic force microscope (AFM) and diverse microelectromechanical systems (MEMS), including sensors and actuators, for over two decades and have been exploited as mechanical transducers for physical, chemical, and biological sensing applications. The dynamic frequency response and the static nanomechanical deflection of a microcantilever are two main transduction mechanisms for microcantilever sensors and novel AFM imaging techniques. Therefore, systematic investigation of dynamic and static responses of microcantilevers is essential for novel AFM imaging technique and microcantilever sensor development. In this talk, I will briefly review the history of the AFM and microcantilever sensor development and discuss recent progress in novel AFM imaging techniques and nanostructured microcantilever sensors.

Dr. Kim is a CERC (Canada Excellence Research Chair) Postdoctoral Fellow at the University of Alberta, Canada. He received his BS (1998) and MS (2000) degrees in Aerospace Engineering from Seoul National University, Seoul, South Korea and PhD (2008) in Mechanical, Aerospace and Biomedical Engineering from the University of Tennessee, Knoxville, USA. He joined Nanoscale Science and Devices Group in Biosciences Division at Oak Ridge National Laboratory, USA as a postdoctoral research associate in June 2008 and moved to the University of Alberta in August 2010 as a CERC research team member in order to continue to work with Prof. Thomas Thundat. His research work is focused on experimental and theoretical studies of nanomechanical microcantilever sensors and novel AFM technique developments.

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