

Nano-Mechanical Measurement Instrument Based on Atomic Force Microscopy

October 5 2004

Veeco Instruments Inc. and The Dow Chemical Company announced that the U.S. Commerce Department's National Institute of Standards and Technology (NIST) Advanced Technology Program (ATP) has awarded them \$6.6 million in funding for a three-year project to develop **a quantitative nano-mechanical measurement instrument.**

Veeco and Dow's proposal was one of 32 selected for award funding from a total of 870 proposals following a rigorous peer-reviewed selection process.

Veeco and Dow propose to jointly develop and validate the world's first platform for high speed, high bandwidth, quantitative nano-mechanical measurements (QNM) on length scales smaller than **50nm**, on a wide range of materials. Successful completion of this proposal would lead to the creation of a new measurement platform enabling the development of nanomaterials. The QNM will be developed at Veeco. The platform will be based on recently demonstrated advancements in **atomic force microscopy (AFM).**

Veeco and Dow's partnership on this project is based upon Veeco's leadership position in AFM science and instrumentation, complemented by Dow's expertise in nanomaterials science and advanced characterization. Technical leads on the joint proposal are Dr. Gregory Meyers, Technical Leader, Dow Chemical, and Dr. Craig Prater, Director of Technology Development, Veeco Research AFM Group.

"The motivation for this project is to remove a fundamental limitation in the development of nanomaterials. Nanomaterials are forecasted to be a multi-billion dollar industry, but material scientists currently lack the ability to accurately and quickly map the mechanical properties of many materials on the nanoscale. Our program will provide a solution," commented Anthony Martinez, Senior Vice President, General Manager, Veeco Metrology.

According to Dr. Prater, "The National Nanotechnology Initiative and the U.S. chemical industry have identified the need for the rapid design of new materials based upon a scientific understanding of material properties at the nanoscale. The Dow/Veeco project to develop quantitative nanomechanical measurements on a wide range of materials will be integral to this 'Materials by Design' vision. We are pleased to receive this prestigious award from ATP, which will accelerate the timeframe of this project by several years."

Carol Dudley, R&D Vice President for Dow's Core R&D, added, "The proposed program aligns a common vision of both companies, namely the acceleration of nanomaterial solutions to the marketplace. This effort will support many ongoing R&D efforts at Dow spanning material offerings for the automotive, electronics, coatings and fabricated products markets as well as efforts in development of new materials characterization technologies."

"We expect this technology will allow material scientists to much more rapidly develop and commercialize new materials with breakthrough performance," said Roshan Shetty, Director Strategic Alliances, Veeco Research AFM Group. "AFMs are unique in the local nanoscale information they provide. Quantitative measurements would be a revolutionary breakthrough that will migrate AFM technology from R&D to nanoscale manufacturing and quality control across multiple industries."

Source: Veeco Instruments Inc.

Citation: Nano-Mechanical Measurement Instrument Based on Atomic Force Microscopy (2004, October 5) retrieved 18 April 2024 from <https://phys.org/news/2004-10-nano-mechanical-instrument-based-atomic-microscopy.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.