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DEPARTMENT OF COMMERCE

International Trade Administration

Ohio State University, et al.

Notice of Consolidated Decision on Applications

for Duty-Free Entry of Scientific Instruments

This is a decision pursuant to Section 6(c) of the Educational, Scientific, and Cultural Materials Importation Act of 1966 (Pub. L. 89-651, as amended by Pub. L. 106-36; 80 Stat. 897; 15 CFR part 301). Related records can be viewed between 8:30 A.M. and 5:00 P.M. in Room 3720, U.S. Department of Commerce, 14th and Constitution Ave, NW, Washington, D.C.

Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as each is intended to be used, that was being manufactured in the United States at the time of its order.

Docket Number: 13-017. Applicant: Ohio State University, Columbus, OH 43210. Instrument: Cryo-SEM System with Aquilo Preparation Chamber. Manufacturer: Quorum Technologies, United

Kingdom. Intended Use: See notice at 78 FR 37206-07, June 20, 2013. Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be fitted to an existing dual beam focused ion beam (FIB) instrument in order to provide a new capability for 3-D imaging and analysis of polymeric materials and biomaterials at cryogenic temperatures below -109 degrees Celsius. The required performance characteristics for this instrument are a highly stable, thermally isolated nitrogen gas-cooled stage which attaches to the SEM stage and is capable of reaching a temperature range of +100 to -190 degrees Celsius, a separately cooled cold trap with independent temperature control capable of reaching temperatures below -190 degrees Celsius, a cryo-preparation, cryo-transfer chamber that is directly attached to the SEM, but with the turbomolecular vacuum pumping and advanced gas cooling system mounted remotely, as well as a high vacuum system consisting of a remotely positioned 70L/s turbomolecular pumping system capable of achieving a vacuum of 10^{-6} mbar or better in the directly attached cryopreparation, cryo-transfer chamber. The instrument will be used for cryo-imaging that will provide new insights in the study of biocompatibility and

failure of orthopaedic implants, and also the evaluation of new materials and implant surfaces for tissue engineering applications. The cryo-preparation, cryo-transfer and cryo-imaging capabilities will enable minimally invasive approaches to be used to investigate structures and interfaces in their near-native vitreous state.

Docket Number: 13-019. Applicant: California State University Northridge, Northridge, CA 91330. Instrument: Ultrahigh Vacuum Low Temperature Scanning Tunneling Microscope. Manufacturer: Unisoku Co., Ltd., Japan. Intended Use: See notice at 78 FR 37206-07, June 20, 2013. Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used to study the electronic and spin-related phenomena (Kondo effect, spin flip, spin injection, etc.) in low dimensional materials including grapheme (one atomic layer of carbon atoms), magnetic materials (transition metals iron, cobalt, nickel and corresponding phthalocyanine molecules), and topological insulators. The techniques to be implemented include depositing magnetic atoms or molecules on grapheme and measuring scanning tunneling

spectroscopy of these magnetic impurities on grapheme, growing grapheme on ferromagnetic materials (cobalt, iron) and measuring the spin-polarization of grapheme induced by the ferromagnetic materials, as well measuring the scanning tunneling spectroscopy on topological insulators. The capabilities required for these experiments that this instrument fulfills include a high magnetic field of 8 Tesla, and measurements at low temperature (<5 Kelvin).

Docket Number: 13-020. Applicant: University of Texas at Austin, Austin, TX 78712-1415. Instrument: V-Gait Dual Belt Instrumented Treadmill. Manufacturer: Motek Medial, the Netherlands. Intended Use: See notice at 78 FR 37206-07, June 20, 2013. Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used to identify structure/properties relationships of polymer based solar cells or for the structural analysis of polymer/nanoparticle hybrid materials for the development of high-density storage devices, as well as to study the self-assembly of bio-polymer systems for drug-delivery system development.

Docket Number: 13-023. Applicant: Max Planck Florida Institute, Jupiter, FL 33458. Instrument: Quanta 250 FEG SEM (D8421). Manufacturer: FEI Company, Czech Republic. Intended Use: See notice at 78 FR 37206-07, June 20, 2013. Comments: None received. Decision: Approved. We know of no instruments of equivalent scientific value to the foreign instruments described below, for such purposes as this is intended to be used, that was being manufactured in the United States at the time of order. Reasons: The instrument will be used for the fabrication of atomic force microscope cantilevers and electron beam deposition. The cantilevers are made from silicon or silicon nitride, with the radius of the tip curvature on the order of nanometers. Electron-beam deposition is a process of decomposing gaseous molecules by electron beam leading to deposition of non-volatile fragments onto a nearby substrate. The electron beam is usually provided by a scanning electron microscope that results in high spatial accuracy (less than one nanometer), and the possibility to produce free-standing, three-dimensional structures. The cantilevers are observed by the scanning electron microscope. The chamber of the scanning electron microscope is filled with carbon gases. Then the electron from the scanning microscope focuses on the

tip of cantilevers to deposit an amorphous carbon. The instrument needs to work with high beam parking precision (~1 nanometer) in the environment in which the material deposition is produced in relatively low vacuum.

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Enforcement and Compliance

November 12, 2013_____
Date

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