



DEPARTMENT OF COMMERCE

International Trade Administration

Fermi Research Alliance, et al., Application(s) for Duty-Free Entry of Scientific Instruments

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), we invite comments on the question of whether instruments of equivalent scientific value, for the purposes for which the instruments shown below are intended to be used, are being manufactured in the United States.

Comments must comply with 15 CFR 301.5(a)(3) and (4) of the regulations and be postmarked on or before [INSERT DATE 20 DAYS AFTER DATE OF PUBLICATION IN THE **FEDERAL REGISTER**].

Address written comments to Statutory Import Programs Staff, Room 41006, U.S. Department of Commerce, Washington, D.C. 20230. Please also e-mail a copy of those comments to Dianne.Hanshaw@trade.gov.

Docket Number: 24-001. Applicant: Fermi Research Alliance, P.O. Box 500, Batavia, IL 60510. Instrument: Helium Refrigeration/Liquification Plant and accompanying accessories. Manufacturer: Air Liquide, France. Intended Use: The PIP II linear accelerator will provide unparalleled achievement in particle acceleration. These accelerated particles will be born at the FNAL site in Batavia, IL and accelerated via the PIP II linear accelerator through the Earth approximately 900 miles west into the Deep Underground Neutrino Experiment (DUNE) located in Lead, SD, to discover whether neutrinos violate the fundamental matter-antimatter symmetry of physics. The design, research, development, and results from the construction and use of the PIP II Linear Accelerator will be the subject of high energy physics and physics engineering courses at dozens of domestic and international institutions of higher

education. No specific course titles are available at this time, but the information will be extensively discussed and challenged at college and university classrooms for years to come.

Justification for Duty-Free Entry: According to the applicant, there are no instruments of the same general category manufactured in the United States. Application accepted by

Commissioner of Customs: December 19, 2023.

Docket Number: 24-002. Applicant: Washington University in St. Louis, One Brookings Drive, St. Louis, MO 63130-4899. Instrument: Two-Dimensional Material Metallographic

Microscopic Transfer System. Manufacturer: HIGH HOPE ZHONGDING CORPORATION,

China. Intended Use: The instrument is intended to be used for all general two-dimensional

(2D) materials like graphene, molybdenum sulfide, black phosphorus, 2D magnetic et al., to perform a comprehensive set of optical experiments aimed at elucidating optical and magnetic

properties of superlattices based on 2D materials et al. The main objective is to create new quantum materials as designed, to study exotic quantum states, which is crucial for the

evolution of optical, electronic and information technologies of the future. This transfer stage

is particularly developed for cutting-edge technology in the fabrication and manipulation of

two-dimensional materials, which is crucial for researchers in these fields. Justification for

Duty-Free Entry: According to the applicant, there are no instruments of the same general

category manufactured in the United States. Application accepted by Commissioner of

Customs: January 3, 2024.

Docket Number: 24-003. Applicant: University of Colorado JILA Department, Campus Box 440 UCB, JILA Building, Room S/175, Boulder, CO 80309. Instrument: Narrow Linewidth

Laser. Manufacturer: Shanghai Precilasers Technology Co, Ltd., China. Intended Use: The

instrument will be intended to be used for Quantum simulation using Lithium atoms in a

cryogenic environment. Ultracold Lithium atoms will be used for studies of the Fermi-Hubbard

model, which are an ideal platform for such studies due to their broadly tunable interactions

with Feshbach resonances. Observation will determine whether low temperature phases of the Fermi-Hubbard model can be revealed by performing our experiments within a cryogenically pumped environment to improve the evaporatively cooled gas temperatures due to suppression of hole-induced heating. Justification for Duty-Free Entry: According to the applicant, there are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: January 17, 2024.

Docket Number: 24-004. Applicant: University of Colorado JILA Department, 1900 Colorado Avenue, Campus Box 440 UCB, Boulder, CO 80309. Instrument: Fiber Laser. Manufacturer: Shanghai Precilasers Technology Co., China. Intended Use: The instrument is intended to be used for research that will be conducted on barely interacting Strontium (Sr) atoms confined and cooled by lasers down to extremely cold temperatures, below 1 microkelvin. The frequency of transition to a highly stable state in Sr atoms can be used as the reference of the unit of time. To realize the atomic clock operation, precision quantum spectroscopy experiment will be performed to measure the transition frequency. The laser claimed for the duty-exemption is an 813 nm fiber laser module with a single-mode continuous-wave (CW) output power of 10 W, which will be used for setting up the 813 nm magic-wavelength optical lattice for our experiment. The Sr atoms are thus confined in each lattice node while showing minimally perturbed transition frequency. The research is conducted by graduated students at the University of Colorado as field training in their degree programs. Justification for Duty-Free Entry: According to the applicant, there are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: January 23, 2024.

Docket Number: 24-005. Applicant: University of Florida, P.O. Box 118525, Gainesville, FL 32611. Instrument: UniPrep2 for determining hydrogen isotopic composition. Manufacturer: EuroVectro, Italy. Intended Use: The instrument Uniprep2 is intended to be used in the

measurement of hydrogen isotope composition of complex organic samples to control hydrogen-isotope exchange and for sample drying and vapor equilibration. The properties of the materials studied are that they have exchangeable hydrogen and residual moisture contamination. This instrument helps to address those complications that can have biased results. Justification for Duty-Free Entry: According to the applicant, there are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: January 25, 2024.

Docket Number: 24-006. Applicant: University of Colorado JILA Department, Campus Box 440 UCB, JILA Building, Room S/175, Boulder, CO 80309.

Instrument: Narrow linewidth laser@2923nm. Manufacturer: Shanghai Precilasers Technology Co., Ltd, China. Intended Use: The instrument is intended to be used to study continuous superradiant lasing from Strontium atoms. The lasing will be induced in part using the lasing system purchased. The laser will be used to perform experiments that will demonstrate (for the first time anywhere) continuous superradiant lasing. The laser will be used to cool the atoms to a few millionths of a degree above absolute zero. To achieve these goals, we require a narrow linewidth laser source (<50kHz) with high output power (>400mW) at 2923 nm for laser cooling and trapping Strontium atoms using the internal levels 3P2 to 3D3. Justification for Duty-Free Entry: According to the applicant, there are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: January 32, 2024.

Docket Number: 24-007. Applicant: University of Massachusetts Amherst, Department of Polymer Science and Engineering, 120 Governors Drive, Amherst, MA 01003. Instrument: Food Elasticity Measurement System. Manufacturer: Changfu Technology (Beijing) Company, Ltd., China. Intended Use: The instrument is intended to be used for rubber elasticity – The system allows for measuring properties such as elastic modulus, stress-strain relationship, and

resilience of rubber materials; Food texture temperature response and elasticity, with the temperature control unit, the system enables studying how food textures change in elasticity and firmness with temperature variations; and Polymer glass thermal analysis – the system’s thermal analysis capabilities facilitate the examination of heat conduction properties in polymer glasses, including thermal conductivity and heat transfer behavior.

Justification for Duty-Free Entry: According to the applicant, there are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: January 31, 2024.

Docket Number: 24-008. Applicant: Harvard University, Department of Physics, 17 Oxford Street, Jefferson Laboratory, Cambridge, MA 02138. Instrument: (1) 703nm single frequency fiber laser, (1) 1080nm single-frequency fiber laser. Manufacturer: Shanghai Precilaser Technology, Co., Ltd., China. Intended Use: The instruments are intended to be used in support of the Advanced Cold Molecule Electron Electric Dipole Moment Experiment (ACME EDM experiment), a collaborative physics experiment now between Harvard University, Northwestern University, and University of Chicago. The goal of the ACME project is to shed light on the reasons for why there is more matter than antimatter in the universe through the measurement of properties of the Thorium-232 Monoxide molecules. Justification for Duty-Free Entry: According to the applicant, there are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: February 7, 2024.

Dated: March 18, 2024.

Gregory W. Campbell,
*Director, Subsidies and Economic Analysis,
Enforcement and Compliance.*