DEPARTMENT OF COMMERCE

International Trade Administration

Harvard University, 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: 25-001. Applicant: Harvard University, 17 Oxford Street. Jefferson 158, Cambridge, MA 02138. Instrument: 1847 nm Narrow Linewidth single frequency fiber laser. Manufacturer: Shanghai Precilaser Technology Co., Ltd., China. Intended Use: The instrument is intended to be used to explore quantum physics experiments at Harvard in the research laboratory in the Department of Physics. This research work is part of the training of graduate students, undergraduate students, and postdoctoral

research fellows. 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 6, 2024.

Docket Number: 25-002. Applicant: University of Colorado JILA Department, Campus Box 440 UCB, JILA Building, Room S/175, Boulder, CO 80309. Instrument: Fiber Laser @ 1038.7 nm. Manufacturer: Shanghai Precilasers Technology Co., Ltd., China. Intended Use: The instrument will be intended to be used to lock our comb closely to the comb line corresponding to the 148.7nm thorium nuclear transition that is essential to our experiment. This will allow us to observe narrower linewidths in the experiment. The experiment is performing high-resolution spectroscopy on the nuclear clock transition in thorium-229 doped into a CaF2 crystal. 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 8, 2025.

Docket Number: 25-003. Applicant: California Institute of Technology, 1200 E California Boulevard, Pasadena, CA 91125. Instrument: Narrow-Linewidth Laser. Manufacturer: Shanghai Precilasers Technology Co., Ltd., China. Intended Use: The instrument is intended to be used for cooling of ytterbium atoms on the intercombination line to reach temperatures lower than 50 micro-Kelvin using frequency doubling of the high-power narrow-linewidth 1112 nm laser source. In addition, the narrow-linewidth laser will be used for fluorescence imaging as well as state preparation of the ytterbium atoms in one of two desired spin states. For all of these applications, the narrow linewidth as well as output power is crucial in terms of meeting the experimental objectives. 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 21, 2025.

Docket Number: 25-004. Applicant: University of Colorado JILA Department, Campus Box 440 UCB, JILA Building, Room S/175, Boulder, CO 80309. Instrument: High-power, narrow linewidth fiber laser. Manufacturer: Shanghai Precilasers Technology Co., Ltd, China. Intended Use: The instrument is intended to be used for two applications: 1) We want to use it as a laser source that we will double to the wavelength of 517nm, which will act as a novel transport system of ytterbium atoms between ultra high vacuum chambers. 2) We want to use the laser itself as a light source to trap ytterbium atoms – a novel alternative to our current trapping lasers in the visible range of light. To meet the needs of both, use cases, we require a narrow fiber laser combined with a high power CW fiber laser amplifier. 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 28, 2025.

Docket Number: 25-005. Applicant: University of Washington, 4300 Roosevelt Way Ne, Roosevelt Commons West, Seattle, WA 98105-4718.
Instrument: Femtosecond lasers with ultrahigh power.
Manufacturer: ULTRONPHOTONICS CO., LTD., China. Intended Use: The instrument is intended to be used to study very thin materials, just one atom thick, called two-dimensional materials. These materials behave in very special ways that are different from the everyday bulk materials. The laser will also be used to study semiconductors to better understand how they process information and energy. The ultimate goal is to advance chip development and realize quantum computers, which

can drive breakthroughs in many areas, particularly, in artificial intelligence (AI), that can also improve energy conversion efficiency and make electric vehicle batteries safer. 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 4, 2025.

Docket Number: 25-006. Applicant: Rice University, 6100 Main Street, MS-61, Houston, TX 77005. Instrument: Narrow linewidth laser. Manufacturer: Shanghai Precilasers Technology, Co., Ltd., China. Intended Use: The instrument is intended to be used for the 3.4um laser from Precilasers to drive an electronic transition across two metastable energy levels in the singly ionized Ytterbium ion (Yb^+). The Yb^+ion has a rich energy level structure owing to its electronic configuration as a rare earth element. The $^{171}Yb^+$ ion (isotope=171) consists of two ground state energy levels ($^2S_{1/2}$ state) that are robust to perturbations and are, therefore, used to encode a bit of quantum information (qubit). 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 20, 2025.

Docket Number: 25-007. Applicant: University of Colorado JILA Department, 1900 Colorado Avenue, Campus Box, 440 UCB, Boulder, CO 80309.
Instrument: Integrated laser and amplification system. Manufacturer: Shanghai Precilasers Technology Co., Ltd., China. Intended Use: The instrument is intended to be used for a high-power, narrow linewidth laser to operate at 1111.6nm. The laser will be used as a seed, and fed to a doubler to get ~3W of 556nm light which we will use for the trapping and cooling of Yb atoms. 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 4, 2025

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Docket Number: 25-008. Applicant: Columbia University, Department of Physics, Pupin Hall, 538 W 120 Street, New York, NY 10027. Instrument: Difference Frequency Generation Fiber Laser, 2923 nm single pass (FL-SF-2923-0.1-CW). Manufacturer: PreciLasers, China. Intended Use: The instrument is intended to be used for driving the mid-infrared optical transition in Strontium-88 atom arrays in optical tweezer experiments. This mid-infrared transition in arrays will be used to excite the 3P2-3D3 transition, enabling the study of quantum simulation on the super-subradiance.

The objectives are to observe the evidence of super-subradiance in the strontium-88 arrays, which are required to observe the lifetime longer or shorter than spontaneous decay of single strontium-88 atom (57 kHz). The mid-infrared transition will excite 2923 nm laser and observe the lifetime of excited state via a state-detection method. 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 10, 2025.

Docket Number: 25-009. Applicant: Duke University, 324 Blackwell Street, Chesterfield Building, 701 W. Main Street, Durham, NC 27701. Instrument: Narrow linewidth, 435nm laser. Manufacturer: Shanghai Precilasers Technology, Co., Ltd., China. Intended Use: The instrument is intended to be used to investigate quantum simulations using trapped Ytterbium ions, and the reduction of readout errors using this laser over current readout procedures and the use of this laser for the optical-metastable-ground qudit architecture. To employ the laser in achieving these

objectives, it will be Pound-Drever-Hall locked to an optical cavity to stabilize its phase and then will be passed through an optical system to deliver light to the Ytterbium ions to drive Rabi flopping and/or induce AC Stark shifts. 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: March 3, 2025.

Docket Number: 25-010. Applicant: Salk Institute for Biological Studies, 10010 N Torrey Pines Road, La Jolla, CA 92037. Instrument: Supernova-3000 miniature three-photon microscope. Manufacturer: Nanjing Transcend Vivoscoper Bio-Technology Co., Ltd., China. Intended Use: The instrument is intended to be used for Biological studies and its Biophotonics Center which aims to uncover the cellular and molecular mechanisms underlying physiology and pathology, including Alzheimer's disease, neuropathic pain, multiple sclerosis, and spinal cord injury. The goal is to develop new or improved treatments for these diseases. All studies will be conducted using animal models for human diseases, especially mice. 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 21, 2025.

Dated: April 7, 2025

Tyler O'Daniel
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Enforcement and Compliance

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