

第 27 回 共催セミナー 2026 年 11 月 17 日 (火) 10:30-11:30

27th Joint Seminar, Nov.17, 2026, 10:30-11:30(JST)

UPWARDS for the Future:
Japan-U.S. University Partnership in
Semiconductors

半導体の人材育成と研究開発に関する日米大学間パートナーシップ

“Investigating two-dimensional materials
as quantum light sources”

—量子光源としての二次元材料の研究—

Prof. Esther Wertz

Rensselaer Polytechnic Institute (USA)

E-mail: wertze@rpi.edu



Held as part of the Japan-U.S. partnership “UPWARDS for the Future.”

■ Abstract: The potential of quantum information science is fueling demand for the design and generation of new qubits and devices operating at the single-particle level. One promising approach uses photons as information carriers. Their long decoherence lengths and fast operation speeds offer natural benefits for rapid and safe quantum communication; however, current state-of-the-art single photon sources are either bulky and poor choices for circuit integration or operate at cryogenic temperatures. On the other hand, color centers, such as defects in two-dimensional (2D) materials, are suitable for small-scale devices that can operate at room temperature, but these sources have their own limitations, particularly their restricted brightness due to fluorescence lifetimes and intermediate dark states, and the control of excitation repetition rate. Moreover, we still lack some of the most fundamental understanding of these defects, and how structural properties correlate to their optical ones. To address the first set of challenges, we work to controllably and reproducibly couple these defects to plasmonic nano-antennas, which can confine light below the diffraction limit, and thus can be used to strongly manipulate quantum emitters and couple them to existing electronic circuits. For the second, we use machine learning to better understand the material properties that are relevant to our applications.

●2026/11/17 (火) 10:30-11:30 On-site / On-line

対面会場：広島大学半導体産業技術研究所 Jイノベ棟 1 F 交流室

オンライン：Teams 招待 URL を後日送付

(On-Site) J-Innovation HUB, RISE, Hiroshima Univ.

(On-line) The teams URL will be sent later.

●申込 Registration Form, Deadline: Nov. 16, 2026, 17:00(JST)

<https://forms.cloud.microsoft/r/Pu2acnZSaa>



Talks and materials presented in this Joint Seminar are not citable official publications.

広島大学半導体産業技術研究所

(Research Institute for Semiconductor Engineering Hiroshima University)

せとうち半導体コンソーシアム

(Setouchi Semiconductor Consortium)

