European Researchers Profile

Korea-EU Horizon Europe Researchers Networking Forum 2026 on Cluster 4

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Your Target Call

HORIZON-CL4-2027-05-DIGITAL-EMERGING-03 - Advanced integrated photonic devices for extended features and ultra-low power consumption (RIA) (Photonics Partnership).

Your Expected Contribution to the Project / Consortium

Single-photon sources, semiconductor heterostructures and device design; application-led consortium architecture and research-to-innovation translation;

Expertise in telecom-wavelength single-photon devices for fibre-optic QKD at Toshiba Research Europe, followed by Oxford research on perovskite quantum dots integrated in tunable open-access optical microcavities for single-photon generation;

Shaping a device-to-system co-development pathway for integrated photonics, spanning information processing, communications and sensing.

Biography

Professor of Physics at the University of Oxford and founding cohort of Singapore's Centre for Quantum Technologies. Research trajectory in semiconductor device physics, quantum photonics, single-photon technologies, optoelectronics and quantum materials. At Toshiba Research Europe, he developed telecom-band single-photon devices for fibre-optic quantum key distribution. At Oxford, his work has included room-temperature single-photon sources using perovskite quantum dots integrated in tunable open-access optical microcavities, producing narrow-linewidth, single-mode emission at room temperature. Previously served as Head of Innovation Services in NEOM's Education, Research & Innovation sector, leading the development of national technology roadmaps in collaboration with the World Economic Forum and advising government on technology infrastructure and innovation strategy.

Research Areas / Expertise

Quantum photonics and single-photon technologies; semiconductor devices, quantum materials and light–matter interfaces; integrated photonics for information processing, communications and sensing; time-resolved spectroscopy; application-led research and innovation translation.

Motivation, Expectation and Plan

The aim is to build an application-led translation pathway from advanced photonic devices to representative system configurations, demonstrators and prototypes, combining single-photon functionality with integrated photonics, advanced materials, heterogeneous integration and packaging for information processing, communications and sensing, and bringing together complementary Korean and European partners for system-level co-development and validation.