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INSTITUTO DE FÍSICA APLICADA E ENGENHARIA DE MATERIAIS
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IAPME Seminar

Quantum initiatives in Norway and discovery of polymorph heterostructures

9 January 2026

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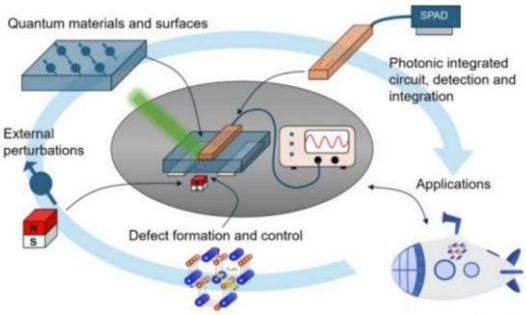
Venue: N23-4018
Time: 10:00 - 11:30
Hosted by: Prof. Shuang-Peng WANG

Abstract

Several initiatives have been recently launched in Norway aiming to strengthen the quantum technology research, even though the size of these initiatives remains relatively modest comparing with the programs running by the leading research nations. Nevertheless, building on our tradition in physics of defects in semiconductors, we organized a Centre for Defects in Semiconductors for Quantum Sensing, active 2025-2030. The vision is that the Centre becomes a hub for national and international cooperation on quantum technology in Norway. For example, there are efforts already resulted in collecting pioneering data on single photon emission in silicon together with EU partners, mastering Er:$LiNbO_3$ quantum memory platform with Korea, or recently commenced project to assist doctors at the Oslo hospital to block tumour cell invasion by more accurate mechanical forces measurements using quantum sensors. Another gain capitalized out of our tradition in physics of defects in semiconductors, is a discovery of disorder-induced ordering and unprecedentedly high radiation tolerance in Ga_2O_3 and related materials. Probably even more importantly, we showed that this process may be tuned towards self-assembling of atomically abrupt polymorph interfaces out of stochastic disorder in solid state. Notably, this work was also performed in a close international collaboration with partners in Europe, China, and Korea. Altogether, these data pave the way for enhancing functionalities in materials with not previously thought capabilities.



Biography

Prof. Andrej KUZNETSOV was awarded with a Ph.D. degree in physics from the Russian Academy of Sciences in 1992 and accomplished his habilitation in solid state electronics in 2000 at the Royal Institute of Technology in Sweden. In 2001 he joined the University of Oslo as an Associate Professor at the Department of Physics, where he was subsequently promoted to a Full Professor rank in 2003. From 2018 he acts as the Chair of the Centre of Excellence: Light and Electricity from Novel Semiconductors (LENS) as a part of the Centre for Mate rials Science and Nanotechnology at UiO. The focus is to understand novel semiconductors, searching for new fundamental phenomena and enabling new device functionalities.