

# Laser, Optics and Photonics

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## Edik U Rafailov

Aston University, UK

**New generation of compact quantum-dot based lasers in the near-IR and its efficient conversion to the visible region**

In this talk, I will review the recent progress in the development of novel CW and ultrashort pulse quantum dot lasers for the generation of light in the near-IR and visible spectral regions. With a brief introduction on QD laser background information, I will discuss the recent achievements in the development of CW/ultrashort pulse lasers. Then I will present the recent progress in the development of broadly-tuneable near-IR QD lasers in the CW and mode-locked regimes. This talk also will give an overview of the advances made with SHG in nonlinear waveguided crystals pumped by QD lasers and discuss various applications of such light sources.

### Speaker Biography

Edik U Rafailov received his PhD from the Ioffe Institute, St Petersburg. Since 1987, he has been engaged in the research and development of different light sources. He was responsible for the first demonstration of novel high-power Al free laser diodes. He was also responsible for the first demonstration of femtosecond pulse generation directly from laser diodes. In 2005 he moved to University of Dundee, UK and established the new group and later in 2014 he moved to Aston University. He has authored and co-authored over 450 articles in refereed journals and conference proceedings, including two books (WILEY), ten invited chapters and numerous invited talks to SPIE, LEOS and CLEO. He also holds 11 UK and two US patents. In 2014 he has been awarded the Lebedev Medal of the Russian Optical Society. He coordinated a €14.7M FP7 IP FAST-DOT and the €12.5M NEWLED projects. Recently he was awarded the H2020 FET project Meso-Brain (€3.3M) and EPSRC UK (£1M). He also leads other projects funded by EU FP7H2020 and UK EPSRC. His current research interests include high-power CW, ultrashort-pulse lasers; generation of UV/visible/IR/MIR and THz radiation, nano-structures; nonlinear and integrated optics; and biophotonics.

e: [e.rafailov@aston.ac.uk](mailto:e.rafailov@aston.ac.uk)



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