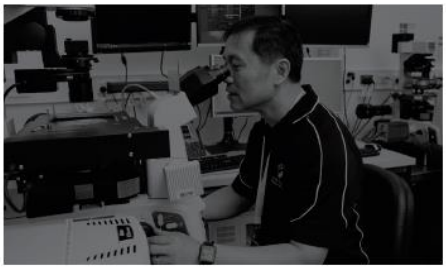



# Photonic Chip Frequency Combs: Australian Made Technologies for Measuring Almost Anything

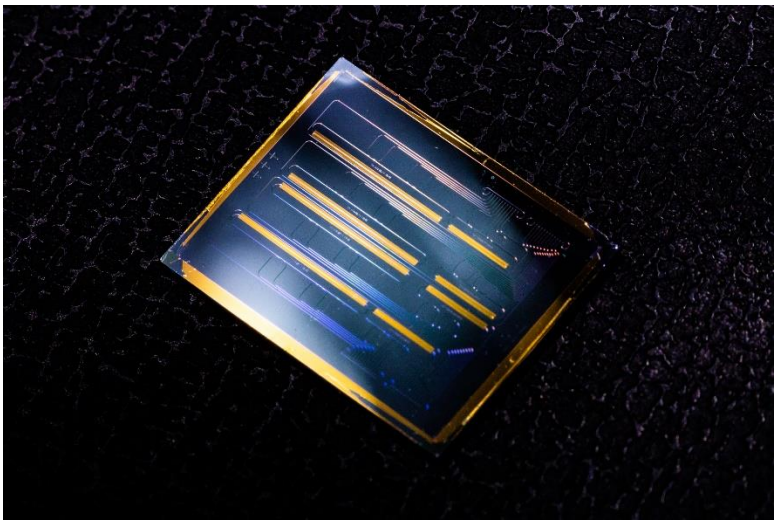
**Dist. Prof. Arnan Mitchell**
Director, Micro Nano Research Facility (MNRF)
Director, Integrated Photonics and Applications Centre (InPAC)
School of Engineering, RMIT University

**11:00am, 28/03/2023**
**At the Melbourne Centre for Nanofabrication Boardroom**
**151 Wellington Road, Clayton, 3168**
**Zoom link: click here**
**Meeting ID: 826 2623 2020 and passcode: 525824**

# Photonic Chip Frequency Combs: Australian Made Technologies for Measuring Almost Anything

**Dist. Prof. Arnan Mitchell**
Director, Micro Nano Research Facility (MNRF)
Director, Integrated Photonics and Applications Centre (InPAC)
School of Engineering, RMIT University
E: arnan.mitchell@rmit.edu.au

**Abstract:**
Optical frequency combs were invented near the end of the 20th century and have revolutionised precision measurement - particularly the measurement of time with optical atomic clocks. Their significance was recognised with the award of the 2005 Nobel Prize in physics, but since then have remained largely within sophisticated laboratories. Recent advances have made it possible to realise optical frequency combs in the form of micro-chips which can be manufactured cheaply, are compact and efficient. These advances open the possibility to use optical frequency combs in a much wider range of applications outside the laboratory with the potential to transform our every-day lives.
This seminar will introduce optical frequency combs, explain how they are used for precision measurement and describe emerging approaches that can be used to achieve optical frequency comb systems as micro-chips. The talk will present an outlook for the diverse areas of application where combs might have transformative impact spanning high-speed data communications, machine learning, seismology, biomedical imaging, monitoring civil infrastructure and the environment, and even searching for life on other planets.
Particular emphasis will be placed on the role of the spectacular ANFF facilities that are enabling us to take a world leading position in this high technology research area - and that will be invaluable in taking the next step to translate these technologies to industry and real-world end-users.



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**Arnan Mitchell** is a Distinguished Professor in the School of Engineering at RMIT University, Director of the RMIT Micro Nano Research Facility (MNRF) – a member of ANFF VIC and is Director of the recently Announced ARC Centre of Excellence for Optical Microcombs for Breakthrough Science (COMBS). He is a highly multidisciplinary researcher working in micro-chip technologies combining light, sound, fluids and electronics with applications spanning radar systems for defence, high speed fibre optic communications and point of care diagnostic systems for biomedicine. He is enthusiastic about translating technology into the hands of end-users and has dedicated much of his career to building and training diverse teams and comprehensive micro and nanotechnology infrastructure to enable breakthrough discoveries to achieve real world impact.