

## **Victor Torres-Company**

Oskar B. Helgason, Zhichao Ye, Fuchuan Lei, Krishna Twayana, Israel Rebolledo-Salgado and Marcello Girardi

Department of Microtechnology and Nanoscience, Chalmers University of Technology, SE 41296 Gothenburg, Sweden

## **Power-efficient soliton microcombs in silicon nitride photonic molecules**

Microcombs are strong contenders for attaining the frequency stability and performance of standard passively modelocked lasers on a chip scale. Understanding the optical phase noise dynamics in soliton microcombs and enhancing the power efficiency are crucial directions for the development of ultra-low timing jitter pulsed sources on-chip with enhanced repetition rate stability and ultra-low optical linewidth. The potential applications include next generation of optical clocks, pure microwave signal generation, optical frequency synthesis, broadband and high-resolution analog to digital converters, high-resolution spectroscopy, phase-coherent lightwave communications and the dynamic calibration of external cavity tunable lasers.

In this invited contribution, we will present our results on the phase noise dynamics of soliton microcombs and the development of record-efficiency soliton microcombs in coupled cavities (photonic molecules) made of silicon nitride.