

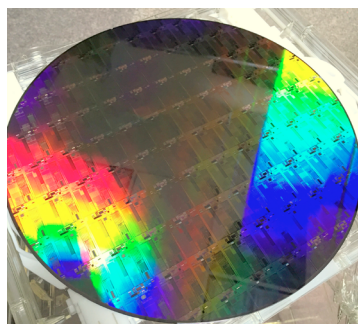
**Date:** Tuesday, 8 December 2015  
**Time:** 5.30 pm  
**Venue:** Harry Messel Lecture Theatre 4002, Sydney Nanoscience Hub,  
The University of Sydney

## What's Next - Computing At The Speed Of Light

**SPEAKER: MICHAL LIPSON**

The **ARC Centre of Excellence CUDOS** has sponsored a series of presentations in celebration of the **2015 International Year of Light**. The presentations in this series have described how scientific breakthroughs in the understanding of light have changed and improved our lives. These range from the most basic level where light is necessary to the existence of life through **photosynthesis**, to the applications of light that have revolutionised transport and processing of **information** through the invention of the laser, optical fibres, **lighting** through the invention of LED's, the remarkable use of **light microscopy** in medicine and biology, **astronomy**, where optical telescopes have shown us our place in the universe, and the tantalizing prospects of the **quantum** nature of light.

**But what about the future? What role can light play in promoting sustainable development and providing solutions to global challenges?**



*Silicon Photonics Wafer*

Data centres are the backbone of the modern economy, but by 2020 they will consume more than 250 megawatts of electricity in the US alone. Driving power consumption down is a major engineering, industrial and political concern. Light as a means for transmitting large amounts of computing data is recognised today as the most promising direction for solving this problem. In contrast to electronics, light does not burn power as it transmits data. The challenge with this approach is that until recently silicon - the basic material used in microelectronics and computing today - has been considered unsuitable for many optical applications.

**Professor Michal Lipson** will discuss how this challenge is being addressed by her ground-breaking research in **silicon photonics**. Her research has harnessed the ability to control the flow of light at GHz frequencies and thereby enhance the natural optoelectronic properties of silicon. This ability to create active optical devices on silicon is the basis for the burgeoning field referred to light on a silicon chip and opens the way for future opportunities for computing at the speed of light!

Following Professor Lipson's presentation light refreshments will be served. We invite you to join us for a glass of champagne to toast the 2015 International Year of Light.

Registration is not required. Please arrive early as seating is limited.

Michal Lipson is Professor of Electrical Engineering at Columbia University (NY, USA). She is one of the main pioneers in the field of silicon photonics and is the inventor of several critical building blocks including the GHz silicon modulator. Professor Lipson holds over 20 patents and is the author of over 200 technical papers. She is co-founder of PicoLuz a company specialising in nonlinear silicon photonic components. Her honors and awards include Macarthur Fellow, Blavatnik Award, IBM Faculty Award, and NSF Early Career Award. Professor Michal Lipson is a Fellow of the OSA and of IEEE and named by Thomson Reuters as a top 1% highly cited researcher in the field of Physics.

