THE ROYAL SOCIETY OF NEW SOUTH WALES

ENRICHING LIVES THROUGH KNOWLEDGE SINCE 1821

1302nd ORDINARY GENERAL MEETING

WEDNESDAY 6 APRIL 2022
immediately following the 155th Annual General Meeting

GALLERY ROOM AT THE STATE LIBRARY OF NEW SOUTH WALES
(ENTRANCE FROM SHAKESPEARE PLACE)

AGENDA

1. MINUTES

Minutes of the 1301st Ordinary General Meeting held on 2 March 2022

2. CONFIRMATION OF MEMBERSHIP

As no valid objection was lodged within two weeks following the 1301st Ordinary General Meeting, the election of the following new Fellows, Members and Associate Members took effect from the date of that meeting held on 2 March 2022.

2.1 Fellows

Professor Igor Aharonovich
Professor Clive Baldock
Professor Anthony Cunningham
Professor Roy Green
Professor Renee Elmina Leon
Dr Tuan Van Nguyen
Dr James Renwick
Professor Shawn Ross

2.2 Members

Dr Holly Eva Katherine Randell-Moon
Dr Diana Wyndham

2.3 Associate Members

Mr Cory Thomas

3 PRESENTATION OF AWARDS

Presentation of the Royal Society of New South Wales Medal for 2020 to Professor Emerita Mary O'Kane

Emerita Professor Mary O'Kane was appointed as the first New South Wales Chief Scientist and Engineer. Prior to that she was Deputy Vice-Chancellor (Research) and then Vice-Chancellor and President of the University of Adelaide

As the New South Wales Chief Scientist and Engineer, she established a relationship between her office and the Royal Society of New South Wales which, in essence, provided the Society with access to the State Government. She advocated for the Society in government and also was a strong supporter of the Royal Society of New South Wales and Four Academies Forum held annually at Government House, Sydney.

Presentation of the History and Philosophy of Science Medal for 2021 to Professor Dean Rickles, The University of Sydney

Professor Rickles has made seminal contributions to both the history and the philosophy of modern physics, creating two-way traffic from conceptual and philosophical issues to historical ones. His work has been used and praised by philosophers, historians, and physicists alike. In particular, he has been a central figure in the emerging field of history and philosophy of quantum gravity, the as yet unknown theory that would treat our two great fundamental theories of physics, general relativity and quantum theory, in a single framework, and has driven much of the current research landscape.

4 ANNOUNCEMENT OF NAMES OF CANDIDATES FOR FELLOWSHIP AND MEMBERSHIP

4.1 Members

Mr Jeffrey Styles

5 REPORT FROM COUNCIL AND COMMITTEES OF COUNCIL

The President will provide a verbal report on matters emanating from the March 2022 Council meeting.

6 QUESTIONS

7 THIS EVENING'S PRESENTATION

NEW FRONTIERS IN SMART SENSOR TECHNOLOGY FOR A HEALTHIER, SAFER AND SUSTAINABLE FUTURE

Professor Benjamin Eggleton, Director, University of Sydney Nano Institute and Co-Director, NSW Smart Sensing Network

This link provides some general background to the talk.

Ben Eggleton's ground-breaking research in photonics underpins novel applications in telecommunications, quantum technologies, and smart sensors. He has received $60 million in research funding, has been an ARC Laureate Fellow and founding director of the ARC Centre of Excellence for Ultrahigh Bandwidth Devices for Optical Systems (CUDOS

He has published over 500 journal papers cited over 40,000 times with an h-number of 110 (Google Scholar). Eggleton is a Fellow of both the Australian Academy of Science and the Australian Academy of Technological Sciences and Engineering, the Optical Society of America (OSA), the International Society for Optics and Photonics (SPIE), the Institute of Electrical and Electronics Engineers (IEEE), and the Royal Society of NSW.

Sensor devices that detect events or changes in their environment are used in everyday objects such as smartphones and ubiquitous applications of which most people are never aware. Recent advances in device physics, nanotechnology, AI, and sensor fusion are leading to a revolution in smart sensor technology that will provide multi-faceted interfaces to the three-dimensional physical, chemical, and data environment, enabling high-performance information gathering and real-time situational awareness.

The talk will provide an overview of recent examples from industry and end-user sponsored projects, including research from the NSW Smart Sensing Network where we are exploring how smart sensors can forecast air pollution and urban heat, reduce the maintenance costs associated with leaks and breaks of water pipes, and remotely monitor soil moisture; from Sydney Nano you will see how single-molecule sensing and wearables are providing for the rapid testing of infectious disease, underpinning a robust roadmap to COVID-19 recovery and beyond; and finally from the Jericho Smart Sensing sponsored by the Royal Australian Air Force, how smart sensors are providing the Air Force with enhanced, advanced situational awareness that enables smart, timely decision-making.

8 VOTE OF THANKS

9 CLOSE – President, Dr Susan Pond AM FRSN