

1309th ORDINARY GENERAL MEETING

WEDNESDAY 7 DECEMBER 2022 AT 6.30PM

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

AGENDA

1. WELCOME – President, Dr Susan Pond AM FRSN

1.1 Acknowledgement of Country

1.2 Diversity and Inclusion Statement

2. MINUTES

Minutes of the 1308th Ordinary General Meeting held on 23 November 2022

3. CONFIRMATION OF MEMBERSHIP

If no valid objection is lodged within two weeks following the 1308th Ordinary General Meeting held on 23 November, the election of the following new Members will take effect from the date of that meeting, that is, 23 November 2022.

MEMBERSHIP

Professor Martina Doblin
Dr Andrei Herdean
Dr Agota Tuzesi

4. ANNOUNCEMENT OF NAMES OF CANDIDATES FOR FELLOWSHIP AND MEMBERSHIP

If no valid objection is received within two weeks following this meeting, that is by 21 December 2022, the election of the following new Member will take effect from the date of this meeting, that is, 7 December 2022.

MEMBERSHIP

Bhavin Raval

5. REPORT FROM COUNCIL AND COMMITTEES OF COUNCIL

5.1 Announcement of Awards for 2022

- **The James Cook Medal** - for outstanding contributions to science and human welfare in and for the Southern Hemisphere. This medal is the Society's most prestigious award.
- **The Clarke Medal** – for distinguished research in the natural sciences conducted in Australia and its territories. This year's award is in the field of geology.
- **The Edgeworth David Medal** – for distinguished contributions by a young scientist under the age of thirty-five years, for work done mainly in Australia or its territories; or contributing to the advancement of Australian science.

- **The History and Philosophy of Science Medal** - in recognition of outstanding achievement in the History and Philosophy of Science with preference being given to the study of ideas, institutions, and individuals of significance to the practice of the natural sciences in Australia.
- **The Walter Burfitt Prize** - awarded every three years for research in pure or applied science, deemed to be of the highest scientific merit.
- **The Liversidge Lectureship** - awarded biennially for research in chemistry.
- **The Warren Prize** - awarded to recognise research of national or international significance by early- or mid-career engineers and technologists.
- **The Jak Kelly Award** - created in honour of Professor Jak Kelly (1928 – 2012) who was President of the Royal Society of New South Wales in 2005 and 2006. The Award encourages excellence in postgraduate research in physics. It is supported by the Royal Society of New South Wales and the Australian Institute of Physics, NSW branch. The winner is selected from a short list of candidates who made presentations at the most recent Australian Institute of Physics, NSW Branch postgraduate awards event.
- **The Royal Society of NSW Scholarships for 2022** - awarded each year to acknowledge outstanding achievements by young researchers in any field of science.

5.2 Nominations and election for 2023 Council

At its meeting on 16 November, the Council agreed to the timetable for nominations for the 2023 Council and the 2023 elections, if needed, as follows:

Nominations open	Noon Monday 20 February
Nominations close	Noon Monday 6 March
Voting opens (if necessary)	Noon Monday 13 March
Voting closes	Noon Monday 3 April
AGM	6.30pm Wednesday 5 April

6 QUESTIONS

7 THIS EVENING'S PRESENTATION

HARNESSING SOLAR ENERGY THROUGH CATALYSIS TO MAKE CHEMICALS AND FUEL

Rose Amal AC FRSN FAA FTSE Scientia Professor of Engineering, School of Chemical Engineering UNSW Sydney

Professor Rose Amal is the leader of the Particles and Catalysis Research Group at UNSW Sydney, and Co-Director of ARC Training Centre for the Global Hydrogen Economy. Her current research focuses on designing nanomaterials for solar and chemical energy conversion applications, and engineering systems for solar-induced processes, using the sun's energy to generate clean fuel. She is a Fellow of the Australian Academy of Technology and Engineering (FTSE), a Fellow of Australian Academy of Science (FAA), a Fellow of the Institution of Chemical Engineers (FICHEM), an Honorary Fellow of Engineers Australia (Hon FIEAust), a Fellow of the Royal Australian Chemical Institute (FRACI) and a Fellow of the Royal Society of New South Wales (FRSN).

She was appointed a Companion of the Order of Australia in the Queen's Birthday Honours in 2018 for her eminent service to chemical engineering, particularly in the field of particle technology, through seminal contributions to photocatalysis, to education as a researcher and academic, and to women in science as a role model and mentor. Rose was named the 2019 NSW Scientist of the Year and awarded CHEMECA medal and James Cook Medal of the Royal Society of NSW in 2021.

Catalysis is the heart of chemistry – most chemical reactions need catalysts – so these reactions need to be efficient and the process as sustainable as possible. Turning to the sun as an energy source to activate catalysts is an obvious place to focus investigations because it reduces reliance on unsustainable fossil fuels. There are a number of means in utilising the sun's energy to drive energetically demanding catalytic processes. We can use (i) electricity from photovoltaic transformation of sunlight to drive electro-catalytic reactions (electrocatalysis), (ii) heat of the sun to activate thermal catalyst (thermal catalysis) and (iii) light of the sun to excite electrons from valence band of a semiconductor to its conduction band (photo catalysis).

Professor Amal will present ongoing research in harnessing the full solar energy spectrum (from ultraviolet to infra-red) to induce or/and enhance catalytic CO₂ and NO_x reduction. Using solar energy to catalytically reduce CO₂ and NO_x has the potential to convert the waste CO₂ and NO_x into fuel and feedstocks, allowing the dual opportunity to store the intermittent renewable energy as well as closing the anthropogenic carbon and NO_x cycle.

8 VOTE OF THANKS

9 CLOSE – President, Dr Susan Pond AM FRSN