# Chemistry Education Research and Practice

www.rsc.org/cerp





#### **Editorial Staff**

Editor Gwen Lawrie Managing editor

Lisa Clatworthy Editorial production manager Helen Saxton

Senior publishing editor Becky Webb

Publishing editor Laura Cooper

Publishing assistant Natalie Ford

Chemistry Education Research and Practice (electronic: ISSN 1756-1108) is published four times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

University Chemistry Education, published by the Royal Society of Chemistry and Chemistry Education: Research and Practice, published from the University of Ioannina, were merged with effect from 1 January 2005. The new, fully electronic journal is published under the title Chemistry Education Research and Practice, and is available free of charge on the internet.

Chemistry Education Research and Practice is indexed/ abstracted in Chemical Abstracts (CA), the Science Citation Index and the Social Science Citation Index, and Educational Research Abstracts Online (ERA).

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

#### Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017; E-mail **advertising@rsc.org** 

For marketing opportunities relating to this journal, contact marketing@rsc.org

# Chemistry Education Research and Practice

# rsc.li/cerp

The journal for teachers, researchers and other practitioners in chemistry education. CERP is free to access thanks to sponsorship by the Royal Society of Chemistry's Education Division.

# **Editorial Board**

**Advisory Panel** 

#### Chair

Ingo Eilks, University of Bremen, Germany Members

George Bodner, Purdue University, US Nicole Graulich (associate editor), Justus Liebig University Giessen, Germany Ajda Kahveci (associate editor), DePaul University, US Gwen Lawrie (editor), University of Queensland, Australia Scott Lewis (deputy editor), University of South Florida, US Claire McDonnell, Dublin Institute of Technology, Ireland David McGarvey, Keele University, UK

Canan Nakiboğlu, Balikesir University, Turkey Vicente Talanquer, University of Arizona, US Daniel Tan, Nanyang Technological University, Singapore David F Treagust, Curtin University of

Ilka Parchmann, University of Kiel, Germany

Keith Taber, University of Cambridge, UK

Georgios Tsaparlis (Founding editor),

University of Ioannina, Greece

Jan H van Driel, Leiden University,

Michael K. Seery, University of Edinburgh, UK

Daniel Tan, Nanyang Technological University,

Zoltán Toth, University of Debrecen, Hungary

Technology, Australia

Singapore

The Netherlands

Bill Byers, University of Ulster, UK Iwona Maciejowska, Jagiellonian University, Melanie Cooper, Michigan State University, US Poland Onno de Jong, University of Utrecht, Rachel Mamlok-Naaman, Netherlands The Weizmann Institute of Science, Israel Iztok Devetak, University of Ljubljana, Slovenia David McGarvey, Keele University, UK Odilla Finlayson, Dublin City University, Mansoor Niaz, Universidad de Oriente, Ireland Venezuela MaryKay Orgill, University of Nevada, Loretta Iones, University of Northern Colorado, US Las Vegas, US Orla Catherine Kelly, Church of Ireland College George Papageorgiou, Democritus University of Education, Ireland of Thrace, Greece

### Information for Authors

Full details of how to submit material for publication in Chemistry Education Research and Practice are given in the Instructions for Authors (available from www.rsc.org/authors). Submissions should be made via the journal's homepage: rsc.li/cerp

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)-Reproduced by permission of the Royal Society of Chemistry. This journal is © The Royal Society of Chemistry 2023. Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

⊗ The paper used in this publication meets the requirements of ANSI/NISO Z39.48–1992 (Permanence of Paper).

Registered charity number: 207890

