

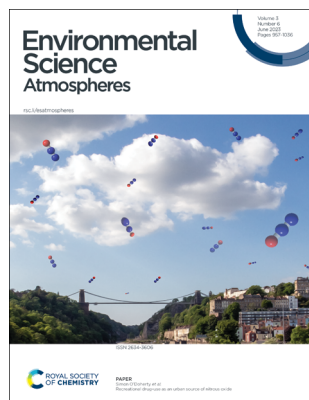
Environmental Science: Atmospheres

rsc.li/esatmospheres

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2634-3606 CODEN ESANC9 3(6) 957–1036 (2023)



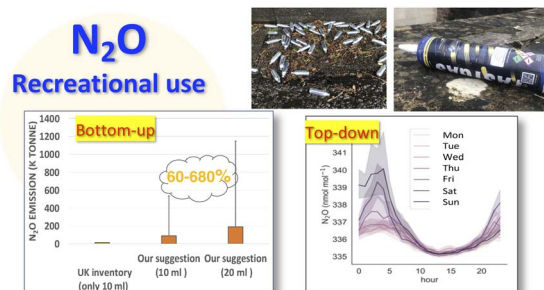
Cover
See Simon O'Doherty *et al.*, pp. 962–969. Image reproduced by permission of Sofia O'Doherty.

PAPERS

962

Recreational drug-use as an urban source of nitrous oxide

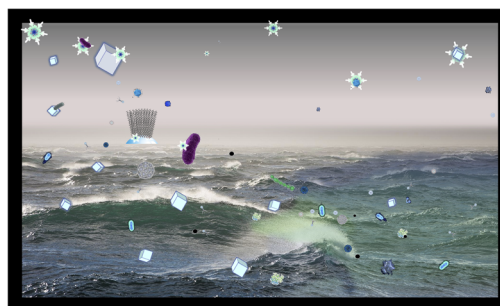
Kanokrat Charoenpornpukdee, Kieran Stanley, Joe Pitt, Angelina Wenger, Alistair Manning, Dickon Young, Daniel Say and Simon O'Doherty*



970

Resolving the controls over the production and emission of ice-nucleating particles in sea spray

Thomas C. J. Hill,* Francesca Malfatti,* Christina S. McCluskey, Gregory P. Schill, Mitchell V. Santander, Kathryn A. Moore, Anne Marie Rauker, Russell J. Perkins, Mauro Celussi, Ezra J. T. Levin, Kaitlyn J. Suski, Gavin C. Cornwell, Christopher Lee, Paola Del Negro, Sonia M. Kreidenweis, Kimberly A. Prather and Paul J. DeMott



Executive Editor

Emma Eley

Editorial Production Manager

Sarah Whitbread

Deputy Editor

Jon Ferrier

Assistant Editors

Jamie Purcell, Aphra Murray, Alexander John, Emily Ellison, Jack Pitchers

Editorial Assistant

Alex Holiday

Publishing Assistant

Lee Colwill

Publisher

Neil Hammond

For queries about submitted papers, please contact Sarah Whitbread, Editorial Production Manager in the first instance. E-mail: esatmospheres@rsc.org

For pre-submission queries please contact Emma Eley, Managing Editor. Email: esatmospheres-rsc@rsc.org

Environmental Science: Atmospheres (electronic: ISSN 2634-3606) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF. Environmental Science: Atmospheres is a Gold Open Access journal and all articles are free to read. Please email orders@rsc.org to register your interest or contact Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK Tel +44 (0)1223 432398; E-mail: orders@rsc.org

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

Environmental Science: Atmospheres

Interdisciplinary open access journal advancing the understanding of atmospheric science and related challenges.

rsc.li/esatmospheres

Led by Neil Donahue (Carnegie Mellon University), *Environmental Science: Atmospheres* is a gold open access journal committed to bringing the wider environmental science and climate change communities together in a fresh, open approach.

Editorial Board

Editor-in-Chief

Neil Donahue, Carnegie Mellon University, USA

Associate Editors

Claudia Mohr, Paul Scherrer Institute, Switzerland
Nonne Prisle, University of Oulu, Finland

Lin Wang, Fudan University, China
Stephen Klippenstein, Argonne National Laboratory, USA
Tzung-May Fu, Southern University of Science and Technology, China

Members

Joel Thornton, University of Washington, USA
Dwayne Heard, University of Leeds, UK

Advisory Board

Katye Altieri, University of Cape Town, South Africa
Federico Bianchi, University of Helsinki, Finland
Muhammad Bilal, Nanjing University of Information Science & Technology, China
William Bloss, University of Birmingham, UK
Ann Marie Carlton, University of California Irvine, USA
Peter DeCarlo, Johns Hopkins University, USA
Aijun Ding, Nanjing University, China
Delphine Farmer, Colorado State University, USA
Barbara Finlayson-Pitts, University of California, Irvine, USA
Christian George, CNRS, University Claude Bernard Lyon 1, France

Marianne Glasius, Aarhus University, Denmark
Mattias Hallquist, University of Gothenburg, Sweden
Thomas Hanisco, NASA Goddard Space Flight Center, USA
Lucy Hutyla, Boston University, USA
Maria Kanakidou, University of Crete, Greece
Prashant Kumar, University of Surrey, UK
Tuhin Kumar Mandal, National Physical Laboratory, India
Linsey Marr, Virginia Tech, USA
Randall Martin, Washington University in St Louis, USA
Ottmar Möhler, Karlsruhe Institute of Technology, Germany
Yujing Mu, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China

Patricia K. Quinn, National Oceanic and Atmospheric Administration, Pacific Marine Environment Laboratory, USA
Andrew Rickard, University of York, UK
Ilona Riipinen, Stockholm University, Sweden
Alfonso Saiz-Lopez, CSIC, Spain
Sachchida Nand Tripathi, Indian Institute of Technology, Kanpur, India
Ying I. Tsai, Chia Nan University of Pharmacy and Science, Taiwan
Marina Vance, University of Colorado Boulder, USA
Hanna Vehkamäki, University of Helsinki, Finland
Bingbing Wang, Xiamen University, China
Shuxiao Wang, Tsinghua University, China

Information for Authors

Full details on how to submit material for publication in Environmental Science: Atmospheres are given in the Instructions for Authors (available from <http://www.rsc.org/authors>). Submissions should be made via the journal's homepage: rsc.li/esatmospheres

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.

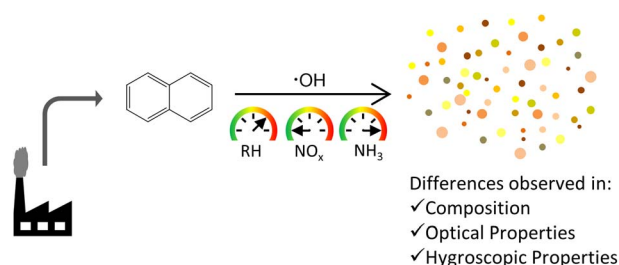
Registered charity number: 207890



991

Effect of relative humidity, NO_x , and ammonia on the physical properties of naphthalene secondary organic aerosols

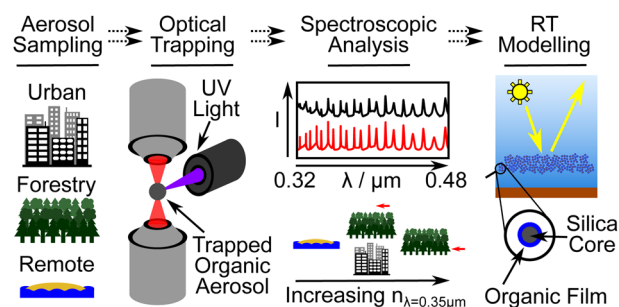
Alexandra L. Klodt, Paige K. Aiona, Amanda C. MacMillan, Hyun Ji (Julie) Lee, Xiaolu Zhang, Taylor Helgestad, Gordon A. Novak, Peng Lin, Julia Laskin, Alexander Laskin, Timothy H. Bertram, Christopher D. Cappa and Sergey A. Nizkorodov*



1008

Ultraviolet refractive index values of organic aerosol extracted from deciduous forestry, urban and marine environments

Connor R. Barker, Megan L. Poole, Matthew Wilkinson, James Morison, Alan Wilson, Gina Little, Edward J. Stuckey, Rebecca J. L. Welbourn, Andrew D. Ward and Martin D. King*



1025

Formation of secondary organic aerosol during the dark-ozonolysis of α -humulene

Dontavious J. Sippial, Petro Uruci, Evangelia Kostenidou and Spyros N. Pandis*

