

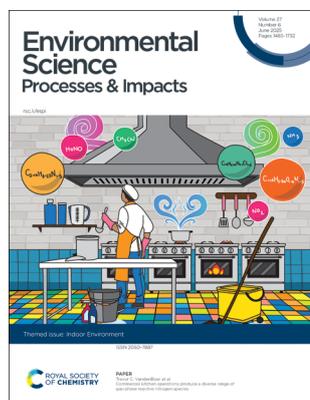
# Environmental Science Processes & Impacts

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## IN THIS ISSUE

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**Cover**  
See Trevor C. VandenBoer *et al.*, pp. 1517–1534. Image reproduced by permission of Trevor VandenBoer from *Environ. Sci.: Processes Impacts*, 2025, 27, 1517.



**Inside cover**  
See Ayomide A. Akande and Nadine Borduas-Dedekind, pp. 1504–1516. Image reproduced by permission of Ayomide Akande and Nadine Borduas-Dedekind from *Environ. Sci.: Processes Impacts*, 2025, 27, 1504.

## EDITORIAL

1493

### Introduction to the indoor environment themed issue

Rachel E. O'Brien and Ellison M. Carter



## COMMUNICATION

1495

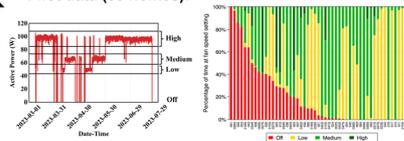
### Accounting for *in situ* air cleaner utilization and performance to improve interpretation of patient outcomes in real-world indoor air cleaner intervention trials

Saeed Farhoodi, Insung Kang, Yicheng Zeng, Kaveeta Jagota, Nancy Karpen, Mohammad Heidarinejad, Zane Elfessi, Israel Rubinstein and Brent Stephens\*



- Key measurements to improve characterization:**
- Air cleaning performance (e.g., CADR)
  - Air cleaner runtime (e.g., power draw)
    - On/off; low, medium, high fan speed settings
  - Space volume → equivalent pollutant loss rates (1/h)

**Pilot data (53 homes):**



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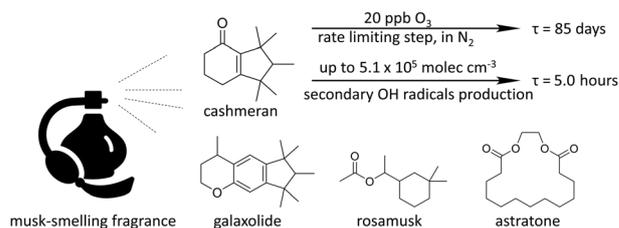


**SAVE  
10%**

1504

### The gas phase ozonolysis and secondary OH production of cashmeran, a musk compound from fragrant volatile chemical products

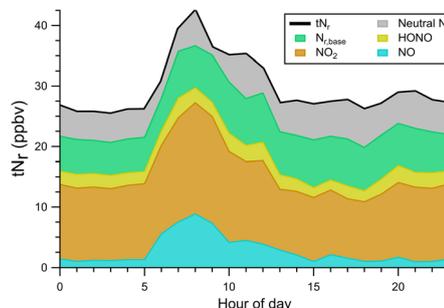
Ayomide A. Akande and Nadine Borduas-Dedekind\*



1517

### Commercial kitchen operations produce a diverse range of gas-phase reactive nitrogen species

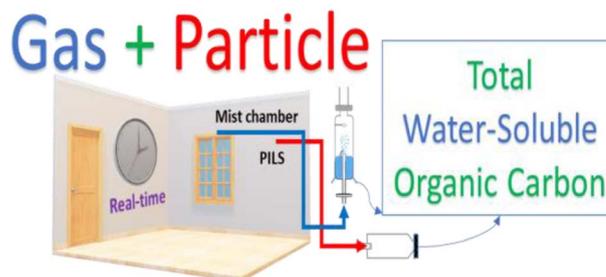
Leigh R. Crilley, Jenna C. Ditto, Melodie Lao, Zilin Zhou, Jonathan P. D. Abbatt, Arthur W. H. Chan and Trevor C. VandenBoer\*



1535

### Dynamics of residential indoor gas- and particle-phase water-soluble organic carbon: measurements during the CASA experiment

Marc Webb, Glenn Morrison, Karsten Baumann, Jienan Li, Jenna C. Ditto, Han N. Huynh, Jie Yu, Kathryn Mayer, Liora Mael, Marina E. Vance, Delphine K. Farmer, Jonathan Abbatt, Dustin Poppendieck and Barbara J. Turpin\*



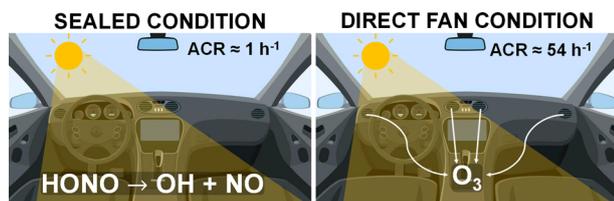
1551

### The chemical assessment of surfaces and air (CASA) study: using chemical and physical perturbations in a test house to investigate indoor processes

Delphine K. Farmer,\* Marina E. Vance,\* Dustin Poppendieck, Jon Abbatt, Michael R. Alves, Karen C. Dannemiller, Cholaphan Deeleepojananan, Jenna Ditto, Brian Dougherty, Olivia R. Farinas, Allen H. Goldstein, Vicki H. Grassian, Han Huynh, Deborah Kim, Jon C. King, Jesse Kroll, Jienan Li, Michael F. Link, Liora Mael, Kathryn Mayer, Andrew B. Martin, Glenn Morrison, Rachel O'Brien, Shubhrangshu Pandit, Barbara J. Turpin, Marc Webb, Jie Yu and Stephen M. Zimmerman



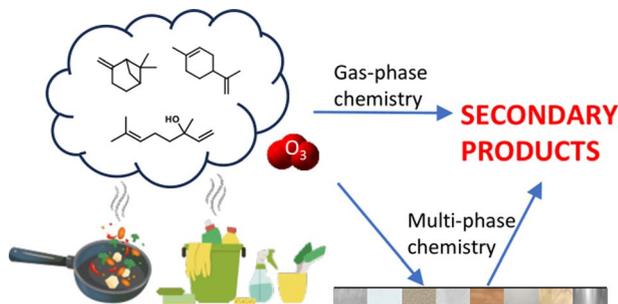
1573



### Oxidant concentrations and photochemistry in a vehicle cabin

Pedro A. F. Souza, Corey R. Kropavich, Shan Zhou and Tara F. Kahan\*

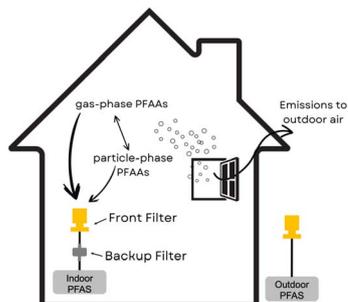
1583



### The impact of surfaces on indoor air chemistry following cooking and cleaning

Ellen Harding-Smith, Helen L. Davies, Catherine O'Leary, Ruth Winkless, Marvin Shaw, Terry Dillon, Benjamin Jones and Nicola Carslaw\*

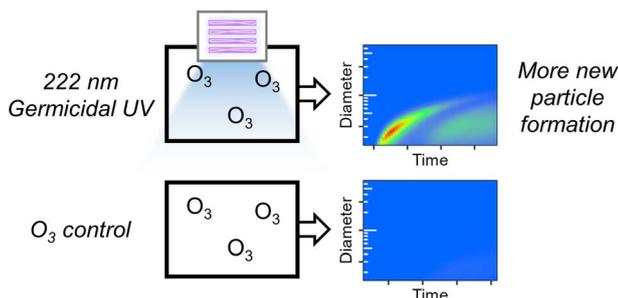
1603



### Indoor air concentrations of PM<sub>2.5</sub> quartz fiber filter-collected ionic PFAS and emissions to outdoor air: findings from the IPA campaign

Naomi Y. Chang, Clara M. A. Eichler, Daniel E. Amparo, Jiaqi Zhou, Karsten Baumann, Elaine A. Cohen Hubal, Jason D. Surratt, Glenn C. Morrison and Barbara J. Turpin\*

1619



### Organic aerosol formation from 222 nm germicidal light: ozone-initiated vs. non-ozone pathways

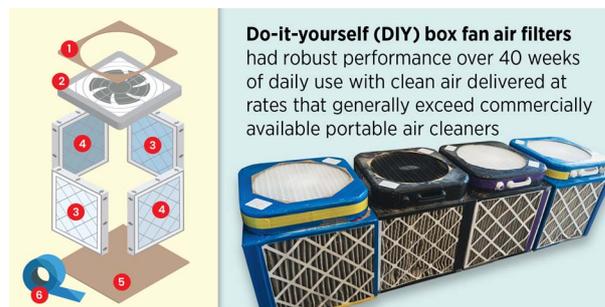
Matthew B. Goss\* and Jesse H. Kroll\*



1629

### Longevity of size-dependent particle removal performance of do-it-yourself box fan air filters

Theresa Pistochini, Graham Jaeger, Christopher D. Cappa and Richard L. Corsi\*

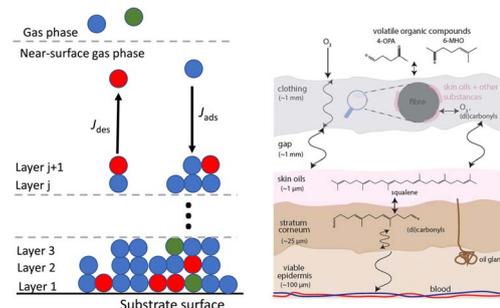


**Do-it-yourself (DIY) box fan air filters** had robust performance over 40 weeks of daily use with clean air delivered at rates that generally exceed commercially available portable air cleaners

1640

### Kinetic multilayer models for surface chemistry in indoor environments

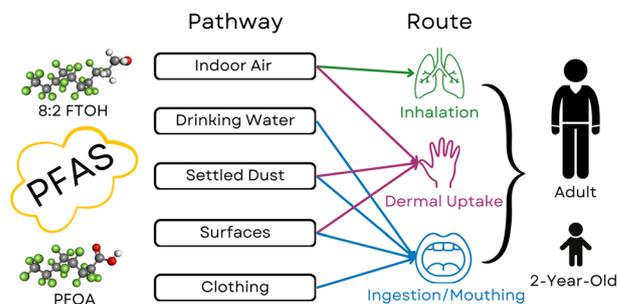
Pascale S. J. Lakey and Manabu Shiraiwa\*



1654

### Exposure to per- and polyfluoroalkyl substances (PFAS) in North Carolina homes: results from the indoor PFAS assessment (IPA) campaign

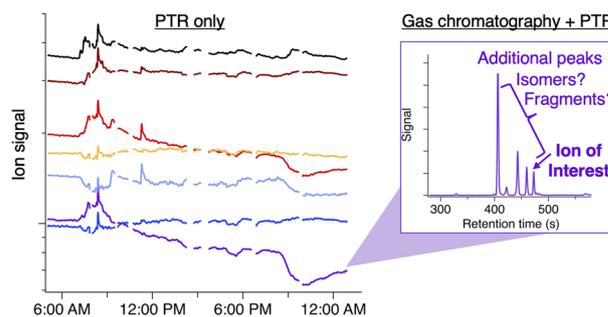
Naomi Y. Chang, Clara M. A. Eichler, Elaine A. Cohen Hubal, Jason D. Surratt, Glenn C. Morrison and Barbara J. Turpin\*



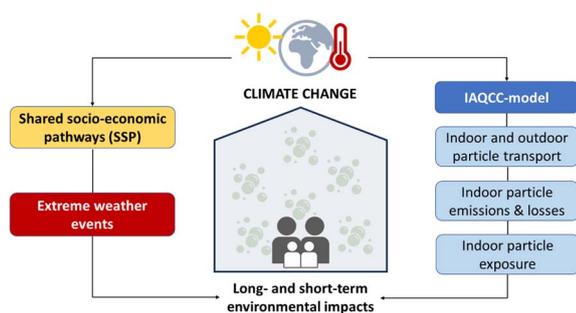
1671

### Speciating volatile organic compounds in indoor air: using *in situ* GC to interpret real-time PTR-MS signals

Jenna C. Ditto,\* Han N. Huynh, Jie Yu, Michael F. Link, Dustin Poppendieck, Megan S. Claflin, Marina E. Vance, Delphine K. Farmer, Arthur W. H. Chan and Jonathan P. D. Abbatt



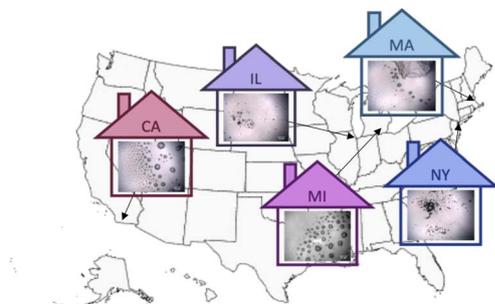
1688



### Long-term prediction of climate change impacts on indoor particle pollution – case study of a residential building in Germany

Jiangyue Zhao, Tunga Salthammer,\*  
Alexandra Schieweck, Erik Uhde and Tareq Hussein

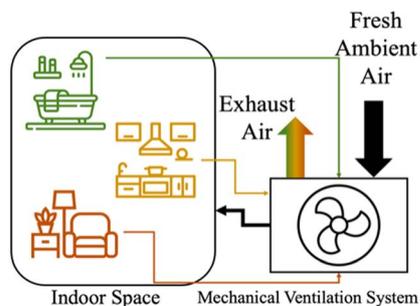
1704



### Indoor surface chemistry variability: microspectroscopic analysis of deposited particles in dwellings across the United States

Alison M. Fankhauser, Jana L. Butman, Madeline E. Cooke,  
Yekaterina Fyodorova, Yangdongling Liu, Rachel  
E. O'Brien, V. Faye McNeill,\* Franz M. Geiger,\* Vicki  
H. Grassian\* and Andrew P. Ault\*

1714



### Volatile organic compound emissions from a multi-unit residential building to ambient air

Amirashkan Askari and Arthur W. H. Chan\*

