Environmental Science & Technology Letters

Editorial

pubs.acs.org/journal/estlcu

The Best of the Best in 2016!

Manuscripts submitted to *Environmental Science & Technology Letters* (*ES&T Letters*) undergo several rigorous technical reviews, first by an Associate Editor and then by multiple external reviewers, to ensure that these studies are of the highest scientific quality. From manuscripts that pass our technical review, we accept for publication only those studies that also warrant urgent publication. As a result, high-quality papers published in *ES&T Letters* are quickly communicated to our readers. Among these many excellent papers, the editors of *ES&T Letters* enjoy recognizing a few papers that particularly stand out among those we have published in the past year. We do not select our papers from specific topical categories, rank them in any order (other than listing them in alphabetical order), or set a fixed number of papers for this special level of recognition. From papers published in 2016, the editors identified four studies that merited inclusion in our awards for "Best Papers". These papers spanned topics ranging from the extraction and recovery of rare-earth metals to studies monitoring chemical transport in the environment.

The recovery and recycling of rare-earth metals is very important because of their scarcity, but separation of many of these metals from aqueous solutions is very difficult. William D. Bonificio and David R. Clarke, in their paper "Rare-Earth Separation Using Bacteria", developed an ingenious approach to extract and concentrate metals from aqueous solutions using biofilms. They showed that three of the heaviest lanthanides (Tm, Lu, and Yb) could be removed by biosorption onto biofilms of the bacterium *Roseobacter* sp. AzwK-3b. Other bacteria may be used for this approach, including *Shewanella oneidensis*, a bacterium known to adsorb and respire metals. Such an approach could lead to technologies for better extraction and recovery of these three lanthanides as well as other rare-earth metals [*Environ. Sci. Technol. Lett.* **2016**, 3 (4), 180−184 DOI: 10.1021/acs.estlett.6b00064].

While it is well established that per- and polyfluoroalkyl substances (PFASs) are contaminants present in many aquatic systems, the broad range of structures of these chemicals is only beginning to be understood. The paper "Legacy and Emerging Perfluoroalkyl Substances Are Important Drinking Water Contaminants in the Cape Fear River Watershed of North Carolina" by Mei Sun, Elisa Arevalo, Mark Strynar, et al., reported on the detection of a class of "alternative" fluorinated chemicals, the perfluoroalkyl ether carboxylic acids (PFECAs), in river water and at different stages of the drinking water treatment process. PFECAs and legacy PFASs were detected at concentrations ranging from tens to hundreds of nanograms per liter, and PFECAs were dominant downstream of a fluorochemical manufacturing facility. Perfluoro-2-propoxypropanoic acid ("GenX"), a replacement for perfluorooctanoic acid (PFOA), and other PFECAs could not be removed by conventional and advanced drinking water treatment processes. Also, activated carbon adsorption was less effective for GenX removal than for PFOA removal. This work suggests the need to monitor a broader range of fluorinated substances and to develop new removal techniques to safeguard drinking water consumers [*Environ. Sci. Technol. Lett.* **2016**, 3 (12), 415−419 DOI: 10.1021/acs.estlett.6b00398].

Methane is a potent greenhouse gas that has been assumed to be produced only under anoxic conditions. However, as summarized in the Review "Methane Production in Oxic Lake Waters Potentially Increases Aquatic Methane Flux to Air" by Kam W. Tang, Daniel F. McGinnis, Danny Ionescu, and Hans-Peter Grossart, methane is also produced in the upper oxygenated layers of lake waters. In some cases, methane release has been positively correlated to primary production. In particular, methane production was associated with blooms of cyanobacteria, and the authors note that such blooms are on the rise because of eutrophication and climate change. The production and release of methane in oxic waters can result in methane emissions from lakes significantly higher than previously assumed [*Environ. Sci. Technol. Lett.* **2016**, 3 (6), 227−233 DOI: 10.1021/acs.estlett.6b00150].

Atmospheric chemists and scientists are publishing in *ES&T Letters* at an increasing rate because the interest of our readers in this area, as well as the rapid time to publication of their studies. "Observation of Fullerene Soot in Eastern China", by Junfeng Wang, Timothy B. Onasch, Xinlei Ge. et al., is an example of a global collaboration of scientists from China, Switzerland, and the United States that required rapid publication for their results because of the urgent need to better study fullerenes in the environment. The novelty of this particular study was the use of a new type of particle-aerosol mass spectrometer (SP-AMS) to identify a wide range of fullerene soot, a component of refractory black carbon, in the air in suburban Nanjing, not far from petrochemical and chemical plants. The findings of this study demonstrated that atmospheric scientists now have a better approach for characterizing the sources and transport of fullerenes in the atmosphere, as well as in other environmental media [*Environ. Sci. Technol. Lett.* **2016**, 3 (4), 121−126 DOI: 10.1021/acs.estlett.6b00044].

It is an honor and pleasure to publish such high-quality and important papers in *ES&T Letters*. While we have identified a few particularly outstanding papers this year, there were also many other excellent papers that were published in the journal during this past year. We look forward to receiving and publishing the next round of "Best Papers" from those appearing in this journal in 2017.

William Arnold, Associate Editor
Bruce E. Logan, Editor*
Daniel Schlenk, Associate Editor
Staci Simonich, Associate Editor

Received: March 19, 2017
Accepted: March 20, 2017
Published: April 5, 2017

DOI: 10.1021/acs.estlett.7b00097
Environ. Sci. Technol. Lett. 2017, 4, 125−126

AUTHOR INFORMATION

ORCID

Bruce E. Logan: 0000-0001-7478-8070

Notes

Views expressed in this editorial are those of the authors and not necessarily the views of the ACS.

DOI: 10.1021/acs.estlett.7b00097
Environ. Sci. Technol. Lett. 2017, 4, 125−126