

Bringing Chemistry to Life podcast series

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Season 2: The 2020 C&EN's Talented 12
Episode 7: Fresh urban water



Episode abstract

Great scientists look at the world around them, identify problems and think about how their area of expertise can provide a solution. This is what Jessica Ray does. In her native St. Louis, she experienced regular urban flooding and grew up familiar with the problem of managing urban wastewater. When, later in life, her studies took her to California, she experienced the opposite problem of severe droughts. This is how she became interested in urban water and started applying her chemical engineering skills to deal with the problem of contaminants, such as PFAS, in urban waste waters.

The theme of the unsustainability of our linear economy – where things are made, used and discarded - returns to the podcast. This episode explores Jessica's disruptive work on the development of cost-efficient methods for the treatment of storm water and other urban water wastes. It's a surprising discovery of a smart combination of everyday materials and clever chemistry that promises to bring us one step closer to a more sustainable circular economy.

About our guest

Dr. Jessica R. Ray

Assistant Professor, Civil & Environmental Engineering,
University of Washington

Jessica's group site: <https://ray-aimslab.com/>

C&EN Talented 12 profile of Jessica:

<https://cen.acs.org/environment/water/Jessica-Ray/98/i31>

Recent Publications from Jessica:

- [A Critical Review of Contaminant Removal by Conventional and Emerging Media for Urban Stormwater Treatment](#)
- [Polymer-clay composite geomedia for sorptive removal of trace organic compounds and metals in urban stormwater](#)
- [Adsorption behavior of perfluorooctanesulfonate \(PFOS\) onto activated spent coffee grounds biochar in synthetic wastewater effluent](#)
- [Antiscalcing efficacy of \$\text{CaCO}_3\$ and \$\text{CaSO}_4\$ on polyethylene glycol \(PEG\)-modified reverse osmosis membranes in the presence of humic acid: interplay of membrane surface properties and water chemistry](#)
- [Hydrophilic, Bactericidal Nanoheater-Enabled Reverse Osmosis Membranes to Improve Fouling Resistance](#)

Jessica's Content Recommendations:

- [Caste: The Origins of Our Discontents](#) (A book by Isabel Wilkerson)
- [His Dark Materials](#) (A trilogy of modern fantasy books by Philip Pullman)
- [Dune](#) (A book by Frank Herbert)

This podcast series is available via the following links



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