

Bringing Chemistry to Life podcast series

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Season 2: The 2020 C&EN's Talented 12 Episode 4: The chemistry of outer space



Episode abstract

The only chemistry we know is what we can experience on our planet, or is it? Brett McGuire is among the pioneers looking beyond the Earth's atmosphere and discovering a surprising and fascinatingly complex chemical world that defies imagination and provides intriguing new insights into the origin of the chemistry we know.

In one of our most fascinating episodes yet, Paolo and Brett discuss astrochemistry, the study of chemistry in outer space. Chemistry in space is unique because it is atmosphere and solvation free, and temperature is really low. By scanning radio telescope spectra, astrochemists are discovering hundreds of complex organic molecules in the spaces between stars, and are developing intriguing new theories on the origin of our chemical reservoir, the reasons for biological L- chirality, and how life could vary in different parts of the universe.

If you're tempted to dismiss this as mere curiosity, you will be surprised by how efforts to study chemistry happening light years away from our planet are often the key to revolutionizing chemistry here on Earth.

About our guest

Brett A. McGuire, PhD

Assistant Professor, Department of Chemistry,
Massachusetts Institute of Technology

Brett's group site: <http://mcguirelab.mit.edu/>

Brett's Twitter: [@astrochembrett](https://twitter.com/astrochembrett)

C&EN Talented 12 profile of Brett:

<https://cen.acs.org/physical-chemistry/astrochemistry/Brett-McGuire/98/i31>

Recent Publications from Brett:

- [Detection of two interstellar polycyclic aromatic hydrocarbons via spectral matched filtering](#)
- [Ubiquitous aromatic carbon chemistry at the earliest stages of star formation](#)
- [Interstellar detection of the highly polar five-membered ring cyanocyclopentadiene](#)
- [2018 Census of Interstellar, Circumstellar, Extragalactic, Protoplanetary Disk, and Exoplanetary Molecules](#)
- [Detection of the aromatic molecule benzonitrile \(\$c\text{-C}_6\text{H}_5\text{CN}\$ \) in the interstellar medium](#)
- [Discovery of the interstellar chiral molecule propylene oxide \(\$\text{CH}_3\text{CHCH}_2\text{O}\$ \)](#)

Brett's Content Recommendations:

- [Astrochemistry Discussions](#) (Monthly, free, online astrochemistry webinar series)
- [The Astrochymist](#) (David Woon's site on all things astrochemistry: papers, news, conferences)
- [The Cosmere](#) (A fantasy book series by Brandon Sanderson; start with Mistborn or The Way of Kings. Audio books narrated by Michael Kramer and Kate Reading are incomparably good.)
- [Critical Role](#) (A bunch of nerdy voice actors play Dungeons and Dragons! Start with Campaign 2 – the production values are excellent).

This podcast series is available via the following links



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