

## Young Career Focus: Prof. Julian G. West (Rice University, USA)

**Background and Purpose.** SYNFORM regularly meets young up-and-coming researchers who are performing exceptionally well in the arena of organic chemistry and related fields of research, in order to introduce them to the readership. This Young Career Focus presents Prof. Julian G. West (Rice University, USA).

### Biographical Sketch



Prof. J. G. West

**Julian G. West** is a Canadian-American chemist who firmly believes the greatest advances in science are only possible through supporting and empowering a diverse team of scholars.

Julian spent his mentored career collecting different chemistry experiences in the US and Canada. He received his B.Sc.H. in chemistry from the University of British Columbia Vancouver (Canada), studying photodecarboxylations with Dr. Glenn Sammis.

Next, he pursued his Ph.D. as an NSF Graduate Research Fellow at Princeton (USA) with Dr. Erik Sorensen, investigating photocatalytic reactions using earth-abundant elements. Finally, he was an NIH and Resnick Postdoctoral Fellow at Caltech (USA), where he investigated inorganic chemistry and electrocatalysis with Drs. Harry Gray and Brian Stoltz.

Julian joined Rice University (USA) in July 2019 as an assistant professor of chemistry, where he and his group have been captivated by the possibilities of free radicals in catalysis. His group seeks to develop a broad collection of useful reactions, and many projects come from exciting student ideas.

Julian recognizes the importance of work–life balance to creativity in science and self-actualization as a person, and group members pursue a wide range of interests outside of lab. Personally, he likes to play music, run, and sometimes write magazine articles.

Julian and his group have been recognized by awards including the NIH Maximizing Investigator's Research Award, the ACS PRF Doctoral New Investigator Award, a CPRIT Scholar in Cancer Research Award and being named on the 2021 Forbes 30 Under 30 – Science list. He is particularly proud of receiving the 2021 Rice Graduate Student Association Faculty Teaching and Mentoring Award.

### INTERVIEW

**SYNFORM** *What is the focus of your current research activity?*

**Prof. J. G. West** Our current research has several intersecting themes: free-radical chemistry, earth-abundant element catalysis, and photochemistry. These main topics are mixed-and-matched by our group members in their pursuit of interesting new chemical reactions, from radical hydrogenation to C–F bond formation. We are not too tied to specific applications as long as they could be useful to someone and/or teach us something new about reactivity.

**SYNFORM** *When did you get interested in synthesis?*

**Prof. J. G. West** I found organic chemistry fairly interesting the first time I encountered it in college and always enjoyed the coursework. However, the first time I became seriously interested in pursuing synthesis research as a career was during my undergraduate research with Prof. Glenn Sammis at UBC. Glenn's kindness, enthusiasm, and sincere belief in the potential of his group members really made the difference in my decision to apply to graduate school in synthesis, and his excellent advice helped me to pick outstanding mentors (especially Profs. Erik Sorensen, Harry Gray, and Brian Stoltz) who similarly prioritize mentoring and supporting their trainees. This thoughtful support really grew my interest in the field and paying it forward is my primary motivation as a professor!

**SYNFORM** *What do you think about the modern role and prospects of organic synthesis?*

**Prof. J. G. West** Organic synthesis is a beautiful field that will always have a role in modern life (so long as we need to make covalent molecules of carbon and hydrogen!). In my view, the next great frontier in organic synthesis is not in a flask, but in how we interact with one another. The historic culture of organic synthesis has not been an inclusive one, and I think that truly changing this will be transformative for

the field, not just in the wealth of new ideas and perspectives brought by recruiting and engaging researchers from historically excluded groups, but also in taking the time to seriously reevaluate how to teach, mentor, and research effectively.

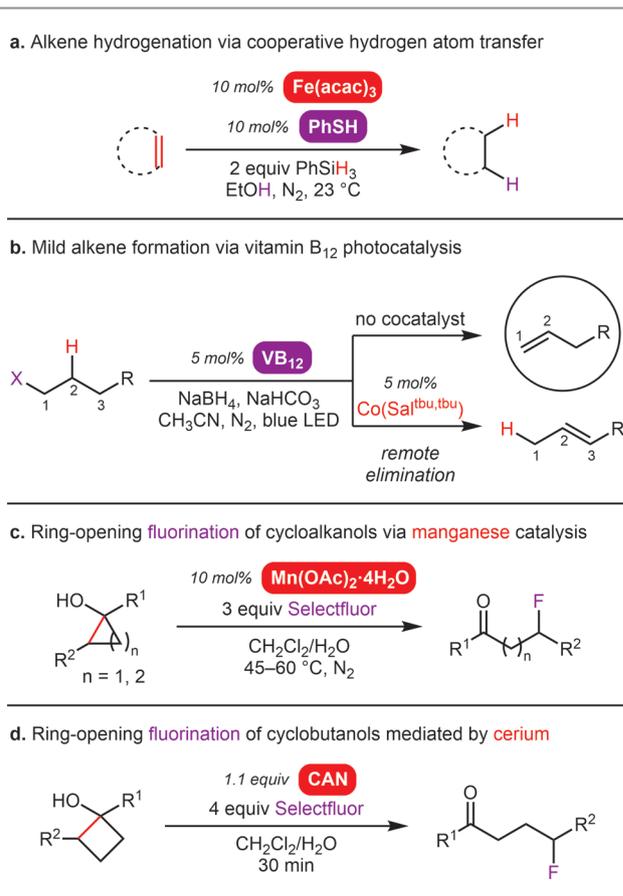
One example of how we are trying to build an inclusive culture in our group is to emphasize the importance of work-life balance and respecting everyone's time outside the lab. Expecting significant efforts outside of normal business hours (e.g. evening or weekend group meetings) can be very challenging for people with caregiving obligations or other commitments, so we do not schedule meetings and events outside normal business hours (9–5) in our lab. Similarly, flexibility can be important to work around other commitments, so we do not have “set hours,” though this freedom does not mean working all the time (I encourage ~40 h/week). I also try to normalize and model this approach by following it myself: I never come in after dinner or on the weekend!

I've been really lucky to recruit a diverse team of co-workers interested in this environment, and I think that we have succeeded (so far) because of it, not in spite of it!

**SYNFORM** Could you tell us more about your group's areas of research and your aims?

**Prof. J. G. West** Our area of research is constantly evolving in response to the interests of our group members; however, I would say that all our current projects fit broadly into the chemistry of free radicals. These intermediates have such rich and diverse reactivity that they can't help but catch the imagination of aspiring synthetic chemists! Thus far, we've found some intriguing cooperative hydrogen atom transfer (cHAT) reactivity of iron and thiol cocatalysts for hydrogenation, some fascinating vitamin B12 photocatalysis for making olefins, and a really direct approach for C–C bond fluorination using cerium or manganese (Scheme 1). In addition to expanding on these areas, we also have some new, student-driven projects in photocatalysis that are just starting to develop and we hope to be able to share soon!

In terms of aims, I would say that I take a “bottom-up” approach to research and training. I think that great science is not something dreamed up by a charismatic “genius” leader, but rather the natural result of curious people being empowered and supported in their explorations. Thus, my greatest aim is to help my group members figure out the questions that get them excited and give them the tools and support to answer them! Some of this support is to encourage everyone to foster their development outside of lab as well, both for the benefits to creativity and because life isn't just about work.



**Scheme 1** New reactions developed by the West group thus far

To sum it up, my primary goal is to help my group members to develop as scientists and people; great chemistry will naturally follow!

**SYNFORM** What is your most important scientific achievement to date and why?

**Prof. J. G. West** I am incredibly proud of every project we have pursued in our lab, especially given the extreme impacts of the COVID-19 pandemic on our research. Every paper we've published has been during the pandemic, and my group has had to overcome some fearsome challenges both in the lab (including occupancy limits, supply chain strain, ever-changing research policies) and outside (including health challenges for friends and family, social distancing, and the ongoing stress of a global pandemic) to finish them. It's absolutely remarkable what these scientists have been able to do under such adversity and I am so grateful to work with them.

I hope that the chemists of the future will come to view some of our research as important; however, I think that helping my group members past, present, and future become curious and balanced scientists will be my most significant achievement.

A handwritten signature in orange ink that reads "Matthew Farah".