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Chemistry Alumnus Earns Research Honor

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Office of University
Communications

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Jacob Walley, '17, Co-Author of 7 Publications, Receives Research Grant



As a student at Gardner-Webb, Jacob developed his research skills in the chemistry lab.

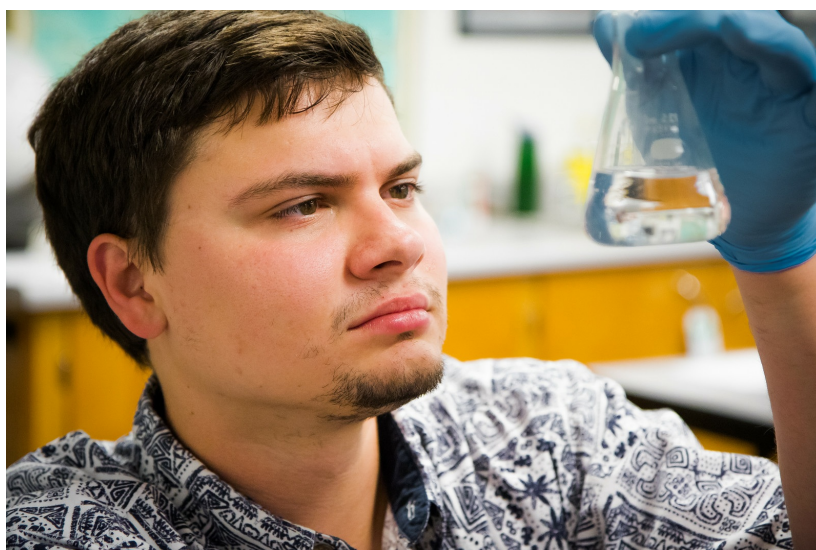
BOILING SPRINGS, N.C.—Gardner-Webb alumnus, Jacob Walley, was recently named the 2020 Adam Ritchie Outstanding Graduate Student in chemistry at the University of Virginia (UVA) in Charlottesville. Given in memory of Ritchie (UVA Ph.D., 1968), this award provides financial assistance to an outstanding graduate student.

Walley received his Bachelor of Science in chemistry from GWU in 2017 and is working on his Doctor of Philosophy in inorganic chemistry from UVA. As a graduate research assistant for the Gilliard Group, he co-authored seven publications in 2019-20 and has contributed to the understanding of chemical processes in several elements. He also won a Graduate School of Arts and Sciences Council Research Grant and presented his work at the 2019 American Chemical Society meeting in Philadelphia, Pa.

His research, along with studies by others in the Gilliard Group, can be used in the development of new medicines, conversion of solar energy to chemical fuels, and the development of more environmentally benign methods to produce materials used in society.

“I am very happy to have won the Adam Ritchie Award,” Walley shared. “As graduate students, we work very hard every day to obtain data that is a suitable contribution to the scientific literature. In our lab, as in most chemistry labs, experiments generally do not go according to plan. I would say that the most rewarding aspect about my research is to find success after many failures. To have this hard work recognized, feels fantastic.”

Most of Walley’s graduate work has focused on beryllium, the least explored member of the alkaline earth metals. This led to the publication of four first-author papers and contributions to other manuscripts. His research is now focusing on nitrogen, phosphorous, arsenic, antimony and bismuth. “Beryllium is the second lightest and smallest metal atom on the periodic table,” Walley explained. “The second element is bismuth, which is just slightly heavier than lead. Both beryllium and bismuth are known as main-group elements. With respect to transition metals, which rule the field of catalysis, the reactivity of main-group elements is less known. Therefore, my research has been to synthesize molecules that embody beryllium or bismuth and explore their various reactivity pathways. There is a big desire in our field to push main-group elements towards exhibiting transition-metal-like reactivity. There are many reasons why we want to do this, two of which are: (1) main-group elements are overall less toxic than transition metals though there are some exceptions to this, and (2) main-group elements are much more earth-abundant.”



Walley discovered his interest in chemistry in high school, and his GWU professors helped him develop his knowledge and research skills. His professors encouraged him to apply for an undergraduate research experience at Florida State. He was accepted and worked with scientists—one was also a GWU alumnus, Dr. David Podgorski. They conducted experiments on the Deepwater Horizon oil spill, the largest marine oil spill in history.

“All the chemistry professors at Gardner-Webb are excellent teachers/mentors who genuinely care about their students’ future,” Walley reflected. “As a result, classes were very engaging, which made learning the material easy. They encouraged me to pursue graduate school. In my final year at Gardner-Webb, I had many discussions with my chemistry professors, where they would mentally prepare me for graduate school and how it is entirely different from life as an undergraduate. My professors giving me the right expectations prepared me the most for graduate school.”

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