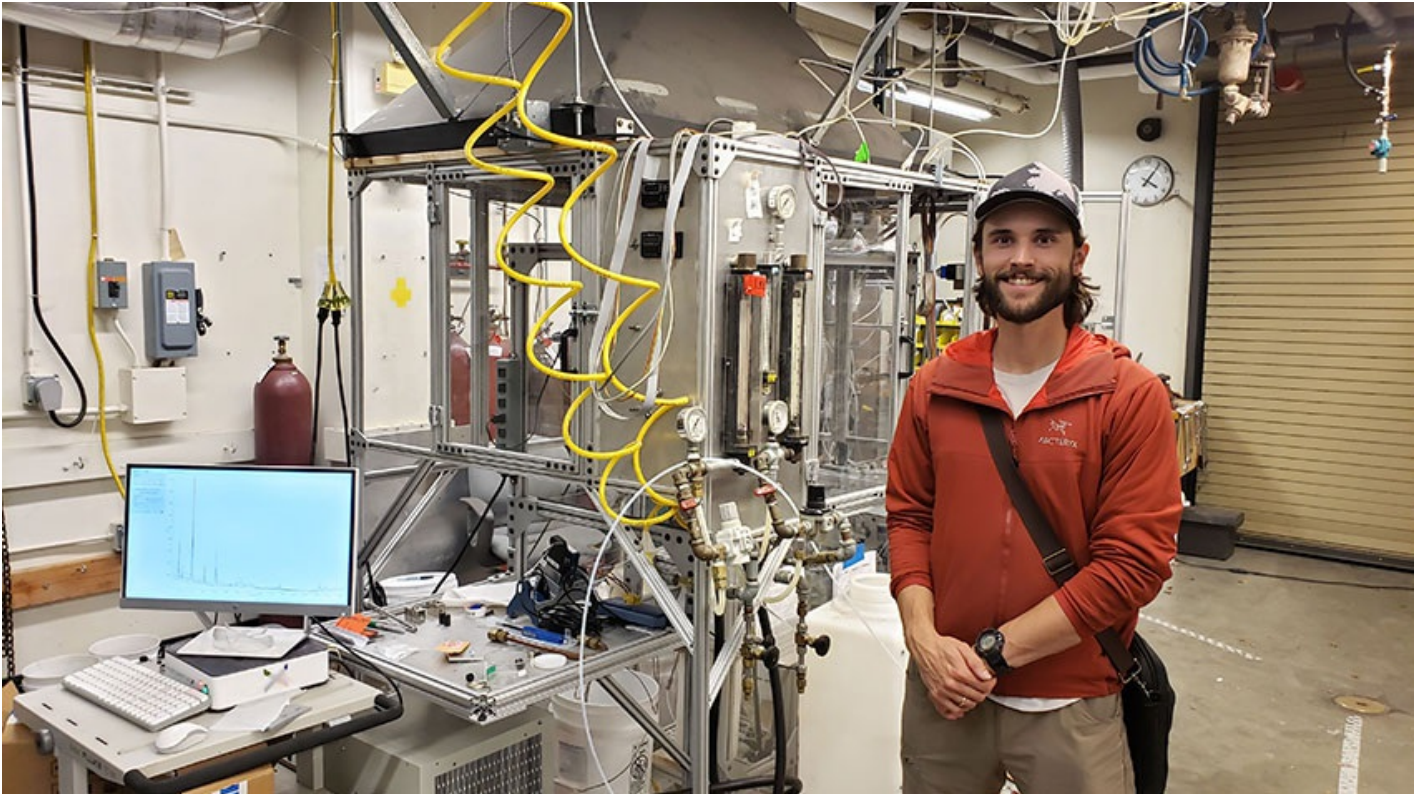


HALTING PFAs: "Forever" Chemicals That Are No Longer Eternal

University of Washington



PFAS, per- and polyfluoroalkyl substances, are synthetic chemicals with strong carbon-fluorine bonds, making them useful for resisting heat, stains and water, but nearly impossible to destroy – they are man-made “forever” chemicals. These highly toxic chemicals have migrated into our air, soil and water supply during disposal efforts. As a result, 99% of Americans have PFAS in their blood, with links to cancer, thyroid disease, elevated cholesterol and fertility impacts.

To address this, Aquagga developed a solution that harnesses the properties of hot, compressed water and a common reagent. The hydrothermal alkaline treatment (HALT) breaks down the bonds that hold PFAS together, mineralizing them entirely while using less than half the energy required to boil a pot of water. In addition, Aquagga does not produce toxic byproducts, a significant improvement over other destructive approaches, such as oxidation or incineration.

Recent peer-reviewed studies in the journals *Chemosphere* and *Environmental Science & Technology* affirm that hydrothermal treatment is effective and safe. The technologies, which are validated and licensed through the University of Washington (UW), the University of Alaska Fairbanks (UAF) and Colorado School of Mines, are backed by seven federal agencies, including the Environmental Protection Agency.

Aquagga is a project of the UW’s Department of Mechanical Engineering. The project originated at UAF and grew

through UW's multidisciplinary Novosselov Research Group (NRG) lab, which is responsible for conducting a range of basic and applied research involving fluid dynamics and energy.

Aquagga was co-founded as a UW spin-out in 2019 by CTO Brian Pinkard, a PhD in mechanical engineering and NRG member. The project has received significant funding and support from CoMotion and other UW groups, including a competitive CoMotion Innovation Gap Fund award, a Postdoctoral Entrepreneurship Program award and an NSF I-Corps award. These awards have totaled over \$1 million in investment funding for Aquagga.

Since its foundation, Aquagga has positioned itself at the intersection of public health and environmental justice in the Pacific Northwest. In addition to developing two HALT systems, which are capable of processing up to 10 gallons of wastewater per hour, Aquagga has been able to destroy 99.99% of PFAS in concentrated stockpiles of firefighting foam.

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