



The 2023 Science Olympiad Alumni Research (SOAR) Grant Winner for Climate/Energy Research Impacting a Safer, Greener World



Omar Kazi
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Molecular Engineering

Omar Kazi is a Molecular Engineering PhD student at the University of Chicago who brings an interdisciplinary approach to his research – a skill he developed as a high school competitor in Science Olympiad: “Who knew that my early exposure to the Water Quality and Invasive Species events would lead me to where I am today?”

Growing stress on limited global freshwater resources, coupled with an insufficient water treatment infrastructure, are threats to the health and security of billions of people across the world. Omar seeks a solution to this problem through interfacial solar steam generation (ISSG), a process that uses porous photothermal materials to convert sunlight into heat. These ISSG devices aim to evaporate and purify water, and furthermore recover precious metals and rare-earth elements in wastewater and geothermal brine. Omar will utilize the \$25,000 SOAR Grant for equipment such as an infrared thermal camera, computers, modeling software licenses, thermocouples and hygrometers to be used as he transitions from the lab-scale to pilot-scale phase.

“Evaporation has been utilized for both cleaning water and recovering resources for millennia. However, this process is extremely energy intensive. Concentrating thermal energy at the air-water interface is a route to major improvements in efficiency,” said Omar’s supervisor, Dr. Seth Darling, Chief Science & Technology Officer of the Advanced Energy Technologies Directorate at Argonne National Laboratory

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Through Science Olympiad, Omar developed lifelong friendships and learned valuable lessons on teamwork and failure. Currently, he volunteers as a Science Olympiad Event Supervisor at the regional and state levels in Illinois and New York and is an active member of the University of Chicago Science Olympiad Alumni Club, engaging K-12 underserved youth with interactive STEM activities like *Science on the South Side*.

The Science Olympiad USA Foundation is a nonprofit organization founded in 2020, dedicated to carrying out the charitable, educational and scientific purposes of Science Olympiad, Inc., a nonprofit formed in 1984. In this inaugural funding year, two \$25,000 SOAR Grants were awarded, one in each category of medical research impacting human health and energy/climate research impacting a safer, greener world.

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