News

Haley & Aldrich announces collaborative research on geotechnical- and remediation-focused projects with Center for Bio-mediated and Bio-inspired Geotechnics

Burlington, Mass., Sept. 21, 2020 – Haley & Aldrich announced today that the firm has been selected to serve as co-principal investigators and/or industrial advisors for two new projects funded by the Center for Bio-mediated and Bio-inspired Geotechnics (CBBG), a National Science Foundation Engineering Research Center. Haley & Aldrich staff will provide in-kind services for both projects.

For the first project, related to geotechnical engineering, researchers are aiming to build an excavating robot to mimic the unique tunneling abilities of the mole rat. Researchers believe the learning from this effort will optimize horizontal directional drilling (HDD) practices. For the second project, related to environmental remediation, researchers will seek to demonstrate a new method for controlling subsurface microbial processes in space and time, allowing remediation treatments to reach areas farther downgradient and prevent bio-clogging. -

“We are thrilled to partner with CBBG on these projects,” said Michael Basel, Haley & Aldrich’s liaison for thought leadership with CBBG and Market Segment Leader for Aerospace. “Both projects show great promise for solving some of the toughest challenges our clients face in their geotechnical and remediation work.”

Carrie Layhee, Geotechnical Engineer, will lead Haley & Aldrich's involvement with the "mole rat-inspired bidirectional propeller for self-excavating probes" project, for which researchers will design a system of coupled anchors that can propel an excavating robot forward and backward to mimic mole rat tunneling behavior. Mole rats can tunnel underground pathways that require 3,000 times the energy they use to travel above ground. This technology could advance HDD, which is a trenchless method for installing utilities underground that is more cost-effective and less disruptive than the alternative of open trenches. Dr. Chloé Arson, Associate Professor at Georgia Tech, will be the Lead Senior Investigator for the research; Dr.-Frank L. Hammond III, Associate Professor also at Georgia Tech, will serve as a Senior Investigator for the project.

Jacob Chu, Senior Associate Engineer, will lead Haley & Aldrich's involvement with the second project, "Enhanced control of microbial activity and substrate delivery via inhibitors for in-situ contaminant treatment." Remediation practitioners are often unable to control microbial processes near injection points, which means either the treatment does not reach areas farther downgradient or excessive microbial growth near the injection point(s) leads to bio-clogging. This project will use a novel method — inhibitors that temporarily deter microbial growth — to control microbial processes in space and time. With its high degree of field applicability, this research offers great potential for bioremediation industries. Dr. Anca Delgado at Arizona State University will be the Lead Senior Investigator for the research; Dr. Nasser Hamdan at Arizona State University will serve as a Senior Investigator for the project.

"We are very pleased with Haley & Aldrich's support for these projects and their participation in the CBBG Industry Advisory Board," said CBBG Director Ed Kavazanjian. "Their engagement is an essential element of CBBG's mission to develop innovative solutions for geotechnical and geoenvironmental issues associated with civil infrastructure."

About CBBG
CBBG is a National Science Foundation-funded research consortium that includes Arizona State University, University of California at Davis, Georgia Tech, and New Mexico State University. CBBG is focused on developing geotechnical processes and solutions inspired by nature that will facilitate sustainable infrastructure development to meet the pressing needs of the world's growing industrialized population.

For more information:
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