



NSF Convergence Accelerator's 2022 Cohort Phase 2 Award

Project Title

PFACTS

Awardee

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NSF Funded Program

NSF Convergence Accelerator

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Track I: Sustainable Materials for Global Challenges

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PROJECT ABSTRACT

PFACTS is a resource for anyone seeking to replace, redesign, or remediate so-called “forever chemicals”. These per- and poly-fluorinated alkyl substances (PFAS) are used in everything from non-stick coatings to compostable food containers to semiconductor manufacturing. Given their environmental persistence and impact on human health, there is an urgent need to find alternatives, but no central clearinghouse for data, tools, and community knowledge—until now. The PFACTS team brings together academic researchers, industry partners, and nonprofit organizations to build a simple, easy-to-use application to recognize PFAS in supply chains, explore or develop alternatives, and identify capture technologies.

PFACTS will be a multi-layered web-based application. The first layer, called “pfasID”, will identify PFAS materials by their common name or chemical structure based on a variety of regulatory definitions. Progressing further, the system will provide a knowledge base of known PFAS, their properties and applications, and potential associated alternatives. Leveraging this knowledge base, PFACTS’ predictive artificial intelligence models and framework will allow users to assess potential alternatives or novel replacements in a holistic manner, considering not just the initial PFAS material itself but also its environmental decomposition products, pathways, and toxicology, to help prevent any “regrettable substitutions”. Finally, there will be a number of essential applications in manufacturing where PFAS use will likely continue for some time. To help users manage their use of PFAS responsibly, PFACTS will provide a recommendation system for capture technologies to stop PFAS from being released into our environment.