

Materials Technology Institute (MTI) Launches Bio-Oil Corrosion Testing Phase Two Research Project

New Project Follows Recently Completed Testing Program to Evaluate Corrosion Behavior of Engineering Alloys Exposed to High-temperature Bio-oil Feedstocks

ST LOUIS, MO, UNITED STATES, March 23, 2026 /EINPresswire.com/ -- The Materials Technology Institute (MTI) has launched a new research initiative to better understand corrosion behavior in bio-oil processing environments, an area of increasing importance as energy producers and refiners explore lower-carbon alternatives to traditional crude oil.



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Shahab Soltaninia, Project Co-Champion

"The outcomes of the MTI [bio-oil corrosion](#) research program will generate firsthand data in a previously underexplored service environment." according to Shahab Soltaninia, Project Co-Champion. "These results will support bio-oil renewable energy producers, engineering

service providers, alloy suppliers, and fabricators by enabling them to take a pioneering role in the sector and to develop fit for purpose solutions."

Many MTI member companies are actively refining 100% crude bio-oils, co-processing renewable feedstocks, or designing facilities capable of operating with bio-oil streams. As interest in bio-derived fuels and feedstocks grows, understanding the corrosion behavior of these materials under real operating conditions has become a priority for engineers responsible for materials selection, inspection planning, and long-term equipment reliability.

The new study builds upon earlier MTI research conducted in Phase 1, which investigated high temperature fatty acid corrosion mechanisms associated with bio-oil processing. One of the key outcomes of those earlier research phases was the development of a flow-through corrosion testing method designed to simulate realistic operating conditions when evaluating metallic materials exposed to bio-oil environments.

MTI's newly launched project will focus on fatty acid corrosion behavior at lower temperature operating conditions, particularly in equipment constructed from carbon steel and commonly used low-alloy materials. The objective of the new phase is to determine whether carbon steel

and related alloys—including low-chrome steels and 300-series stainless steels—may exhibit acceptable corrosion rates under specific lower-temperature to moderate temperature bio-oil processing conditions. The research will again utilize the MTI flow-through testing methodology and will generate new experimental data to support materials selection decisions.

In addition to the new testing program, the project will include a comprehensive surface corrosion study of material coupons exposed during Phases 0, 1, and 2 of the research program. This analysis will provide a deeper understanding of corrosion morphology and degradation mechanisms observed across the testing phases.

The Phase 2 project will provide valuable insights for companies processing bio-oils in existing refining or processing units, particularly those relying on carbon steel and low-alloy metallurgy in preheat sections and related equipment. The findings may help facilities refine inspection programs, evaluate potential alloy upgrades, and better manage corrosion risks associated with bio-oil feedstocks, while also supporting more informed materials selection decisions for new bio-oil processing units.

As the energy industry explores lower-carbon fuels and renewable feedstocks, research like MTI's bio-oil corrosion program helps ensure that materials of construction can safely and reliably support these evolving technologies.

Additional information about MTI research projects and participation opportunities can be found at www.mti-global.org or by contacting mtiadmin@mti-global.org.

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