

## "Characterization of Complex Molecular Mixtures and Carbon-Based Materials"

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(Image credit: Y. Zhang, "Application of Noncontact Atomic Force Microscopy in Petroleum Characterization: Opportunities and Challenges", *Energy Fuels* 2021, 35, 18, 14422)

**Abstract:** Understanding the chemical structure of molecules within complex mixtures such as petroleum, heavy oils, asphaltenes, carbon materials, fuels, and lubricants presents a significant challenge. However, it is crucial for designing and controlling numerous industrial processes. This talk will summarize breakthrough research from the past few years, enabled by the application of noncontact Atomic Force Microscopy to the petroleum field. This work not only provides the first direct imaging of individual molecules within petroleum mixtures but also challenges many conventional beliefs in the field. More importantly, these new findings offer numerous insights and open doors for innovative uses of petroleum molecules beyond combustion, such as in advanced materials and chemicals.

## May 2, 2025 2:00 p.m. Peacock Auditorium, BESB 100

Zoom link: https://tamuk-edu.zoom.us/j/6769157893? pwd=Y29YSTBxeEJVOU1JVkh2MHIXZG5yUT09 Meeting ID: 676 915 7893 Passcode: 552210