



NANOTRIBOLOGY SESSIONS CALL FOR PAPERS

The Nanotribology technical committee invites you to present your research at the **Nanotribology technical sessions** of the 73rd STLE Annual Meeting & Exhibition the premier event for the tribology and lubricants communities. At STLE 2018, the Nanotribology technical committee will also organize **two joint sessions** with the Materials Tribology and Lubrication Fundamentals technical committees, which together aim to showcase cutting edge research in fundamental and applied nanotribology. The Nanotribology committee strongly encourages research presentations that provide fundamental, mechanistic insights into observed tribological phenomena.

You may submit an abstract (not exceeding 150 words) to the Nanotribology sessions through STLE's online abstract submission portal: <https://stle2018.abstractcentral.com/>. Remember to indicate Nanotribology or the appropriate Nanotribology joint session as your topic during the abstract submission process. Please note that the deadline for submission is **Sunday, October 1st, 2017**.

We are currently soliciting the following topics for the Nanotribology technical sessions and joint sessions:

Nanotribology Technical Sessions

Interfacial contact and relative motion is inherently complex and typically involves deformation at the nanoscale, as well as stress-assisted chemical reactions and atom transfer at or across the sliding interface. Nanotribology is the study of friction, wear, and adhesion at the atomic and nanometer length-scale, or dimensions typically less than 100 nm. Investigation into nanotribological phenomena utilizes either direct or semi-direct observation or simulation of these nanoscale phenomena. Nanotribology also involves studying the effects of nanostructures with an emphasis on elucidating their mechanisms for enhancing performance at the macroscale. The goal of such investigation is to obtain an understanding of physical and chemical processes at fundamental length-scales that can enable development of predictive models and transfer nanoscale phenomena to real engineering applications and systems. Nanotribology sessions cover, but are not limited to the following topics:

1. Nanotribology Fundamentals

- Friction, wear and adhesion at the atomic and nanoscale
- Structure-property relationships derived from nanoscale mechanics and tribochemistry
- Mechanisms of nanoscale lubrication and wear; superlubricity
- Nanoscale surface metrology and contact mechanics
- Models for describing nanoscale contact, friction, and wear
- Nanotribology in extreme environments
- Relating nanotribology experiments and simulations
- Friction, wear and adhesion of nanomaterials

2. Applied Nanotribology

- Applications of nanostructures in tribology: Nanoparticles, nanorods, nanosheets
- Scale dependence and issues in translating nanoscale tribology to the macroscale

- Tribology in nanomechanical or electromechanical devices; reliability issues in nanotribology
- Tip-based manufacturing; nanolithography
- Synthesis, formulation, and performance of nanostructures for tribology
- Nanotribology of soft matter – interfacial mechanics, lubrication and mechanochemistry; nano-biotribology
- Material transformation and manipulation at the nanoscale

3. Methods and Techniques in Nanotribology

- *In-situ* instrumentation and measurement techniques
- Novel methods of simulating nanotribological contacts and behavior; simulation techniques
- Novel microstructural; mechanical, or chemical characterization techniques
- Advances in conventional experimental techniques
- Other novel methods

Nanotribology – Materials Tribology Joint Session: Tribochemistry

The technical committees in Nanotribology and Materials Tribology are excited to announce a joint session focussed on *Tribochemistry*. In this joint session, we would like to highlight research that focusses on chemical reactions at the contact interface that are initiated or accelerated by mechanical stresses. We encourage experimental and simulation studies, as well as investigations that link the two. Suggested topics within this focus area include, but are not limited to:

- Chemical bonding across the interface and its contribution to adhesion, friction, and wear
- Atomistic mechanisms of material removal during sliding wear
- The formation or degradation of tribofilms via mechanical stress and chemical reactions
- Experiments aimed at understanding fundamental mechanisms of tribology, including *in-situ* and *in-vivo* testing
- Analytical modelling of mechanical stresses at interfaces and their effects on chemistry
- Atomistic and multi-scale simulations of atomic-scale reactions at interfaces

Please feel free to forward this to your colleagues who might be interestin in the Nanotribology sessions. We look forward to seeing you in Minneapolis!

Sincerely,

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Nanotribology Paper Solicitation Chair