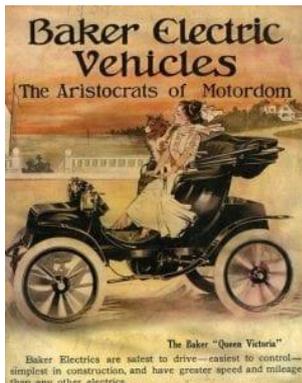




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# SAIT Newsletter, July 2019

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**Tribology and Electric Vehicles** – that’s the title of an [‘electrifying’ article](#) in *Tribonet* – electric vehicles, while often considered a new phenomenon, have existed since the 1800s. At that point in time, electric vehicles outnumbered gasoline powered vehicles for many reasons. Electric vehicles did not have the same vibration, noise, and smell of gasoline-powered cars. Changing gears on gasoline-powered cars presented great difficulties, an issue solved with electric cars, which did not require any gear changes.

With the invention of the electric starter, mass production, and greatly reduced gas prices, the electric vehicle was reduced to the scrap yard heap by 1935.

In the latter half of the nineteen hundreds, concerns began to arise regarding exhaust emissions and its effect on the environment, sparking a renewed interest in the electric car. ***Electric vehicles will become a tribo-technology disrupter.***

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## ETT – Essential Tribology Terminology

### Three of Tribology’s terms that are used and agreed upon:

- **Shear Stability** The ability of a lubricant such as a grease or VI improved oil to withstand mechanical shearing without a change in either consistency or viscosity.
- **Sludge** The formation in lubricating systems of a soft, dark–coloured emulsion consisting mainly of water, oxidized lubricating oil components and, in internal combustion engines, carbonaceous fuel combustion residues.
- **Solvent Refining** A technique for refining base oils using a solvent, usually furfural, for selective extraction of undesirable components.

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## SAIT Training

### Follow the path from data to information and into knowledge:

Please note that our 5-day course, **Lubrication Engineering 121** in Durban, has been **CANCELLED**. We ask that any candidates who have not done so please arrange to attend one of our Johannesburg courses or the Cape Town Course, details below. Thank you for contacting Gill, Isabel or Berice at [secretary@sait.org.za](mailto:secretary@sait.org.za) or [admin@sait.org.za](mailto:admin@sait.org.za).

Cont/...

### The SAIT Training schedule for the remainder of 2019 is:

- **LE 122:** 22 - 26 July 2019, Johannesburg – ***closing date for registration and payment is 13 July.***
- **LE 123:** 26 - 30 August 2019, Cape Town
- **LE 124:** 7 - 11 October 2019, Johannesburg
- **LE 125:** February 2020, Johannesburg (TBA)

**Costs: SAIT Members: R16 031    Non-Members: R17 894    Students: R4 922**

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### STLE examinations at SAIT

The South African Institute of Tribology will host three examinations of the Society for Tribologists & Lubrication Engineers (STLE) on **22 November 2019**. The venue is Science Park, Kelvin, and time is from 09:00 to 12:00. ***The exams are open to SAIT members in good standing.***

- **Certified Lubrication Specialist (CLS):** Although not compulsory, it is highly recommended that you first attend the SAIT five-day 'Lubrication Engineering' course. A distinction of 75% is a good indication of success in the CLS exam, where the standard is high and the pass mark is 70%. The recommended books for the CLS exam are the STLE Alberta Section 'Basic Handbook of Lubrication' Third Edition, and/or the AIST 'The Lubrication Engineers Manual' Fourth Edition.
- **Oil Monitoring Analyst (OMA I and OMA II)**
- **Certified Metalworking Fluids Specialist (CMFS)**

Recommended reading for all modules is on the [STLE website](#) under "Professional Development".

For further information, costs and to register, please contact Gill, Isabel or Berice at the SAIT offices: Tel. (+27) (0)11 804 3710 or email [secretary@sait.org.za](mailto:secretary@sait.org.za) or [admin@sait.org.za](mailto:admin@sait.org.za).

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## International Events:

**In January 2020 the 22<sup>nd</sup> International Colloquium Tribology** will take place at the Technische Akademie Esslingen. The conference provides an international exchange forum for the industry and the academia. Leading university researchers present their latest findings, and representatives of the industry inspire scientists to develop new solutions. Discussions and co-operations enable attendees to meet current tribological challenges.

One of the main topics is the forthcoming e-mobility technology, its various aspects and its consequences for the lubrication and tribology community.

A.V. Chichinadze Association of Tribology Engineers at RUSEA continue to register participants and speakers for [International Tribology Symposium YarTribNord - 2019](#) held in Yaroslavl, **September 17-19, 2019**. Information about the revised registration terms, participation conditions and paper submission order are in a 4-page pdf document available from the SAIT – [admin@sait.org.za](mailto:admin@sait.org.za)

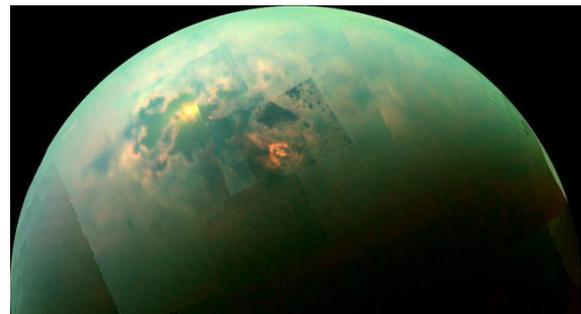
**Global Lubricant Week 2019** – will be held at the Radisson Royal Hotel in **Moscow** October 8-11, 2019. 650 participants from 25 countries with 50 speakers over 4 days. For more details please contact, contact Elena Konstantinova Tel: + 7 495 502-5433 / +7 495 778- 9332 e-mail: [konstantinova.elena@rpi-inc.ru](mailto:konstantinova.elena@rpi-inc.ru) and at [Global Lubricant Week 2019, Moscow](#)

**IndiaTrib 2019**, is the International Conference being organized by the Indian Institute of Science and Tribology Society of India. The conference will be held at the Indian Institute of Science, Bangalore from the 1<sup>st</sup> - 4<sup>th</sup> of December 2019. IndiaTrib – 2019 is going to be a unique event with a galaxy of international tribology experts who have already confirmed their participation as plenary and Keynote speakers. This could be a once-in-a-lifetime opportunity to hear from among the best tribologists around the world. Please follow on [indiatrib19@tribologyindia.org](mailto:indiatrib19@tribologyindia.org)

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## Tribology out of this world

The recent announcement that a drone will be sent to explore Titan, one of Saturn's largest moons emphasises the exciting developments around space travel. Friction in outer space is subject to totally different challenges when compared to friction on earth. '**Tribology for Space Technology**' is the title of a paper by Weimin Liu, Lijun Weng, Dapeng Feng and Feng Zhou at the World Tribology Congress 2017 in Beijing China and from the State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics.



Titan, Saturn's Moon

- The paper lists 'oils that can meet heavy load working conditions such as the lubrication of the moving parts in the environment of -70°C ~250°C, hot vacuum environment and vacuum overload conditions.'

A summary abstract on '**Tribology for Space Technology**' is available from the SAIT – [admin@sait.org.za](mailto:admin@sait.org.za).

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## Lessons from Nature - Biomimetics or Biomimicry: Bioinspired Surfaces for Green Tech

**Bharat Bhushan | TEDx Ohio State University**

Take this U-Tube link for a fascinating look at "[Lessons from Nature: Bioinspired Surfaces for Green Technology](#)" by Prof. Bharat Bhushan Ohio Eminent Scholar and The Howard D. Winbigler Professor Plus Director, Nanoprobe Lab for Bio- & Nanotechnology and Biomimetics

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- Prof Bharat Bhushan is an authority on Nano-Tribology and was one of the SAIT guest speakers at Tribology 2011, the SAIT-organised international tribology conference.
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## PARTING SHOT

### Did You Know?

There are several types of friction:

- **Dry friction** is a force that opposes the relative lateral motion of two solid surfaces in contact. Dry friction is subdivided into *static friction* ("stiction") between non-moving surfaces, and *kinetic friction* between moving surfaces. With the exception of atomic or molecular friction, dry friction generally arises from the interaction of surface features, known as asperities
  - **Fluid friction** describes the friction between layers of a viscous fluid that are moving relative to each other
  - **Lubricated friction** is a case of fluid friction where a lubricant fluid separates two solid surfaces.
  - **Skin friction** is a component of drag, the force resisting the motion of a fluid across the surface of a body.
  - **Internal friction** is the force resisting motion between the elements making up a solid material while it undergoes deformation.
    - Reference: <https://en.wikipedia.org/wiki/Friction>
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