



# SAIT Newsletter, January 2012

## TRAINING PROGRAMME 2012

### "Lubrication Engineering"

five day course – 5 CPD credits

13-17 February

Johannesburg – **fully booked**

14-18 May

Durban – **booking open**

11-15 June

Johannesburg – **booking open**

13-17 August

Cape Town – **booking open**

Cost: SAIT Members R7 980; Non members R8 949; Students R2 337

### "Introduction to Lubrication Engineering"

one day course – 1 CPD credit

8 February

Johannesburg – **booking still open**

Cost: SAIT Members R2 394; Non members R2 508; Student R 700.

### "Introduction to Wear & Materials"

one day course – 1 CPD credit

9 February

Johannesburg – **booking still open**

Cost: SAIT Members R2 394; Non members R2 508; Student R 700.

### "Introduction to Lubricating Oils"

one day course – 1 CPD credit

23 February

Johannesburg – **booking still open**

Cost: SAIT Members R2 394; Non members R2 508; Student R 700.

In-house courses will be considered on request.

Programme subject to change.

For further information and registration forms contact Gill or Isabel at [secretary@sait.org.za](mailto:secretary@sait.org.za).

## Tribology: Friction, Wear and Lubrication:



A short course will be presented by The University of the Witwatersrand School of Chemical and Metallurgical Engineering in collaboration with The South African Institute of Tribology **from 4 - 8 June 2012**.

For enquiries and booking: Contact: **Melissa Moodley**, Tel: +27 11 717 4598 or via email [Melissa.Moodley@wits.ac.za](mailto:Melissa.Moodley@wits.ac.za)



To register online visit: [www.witsenterprise.co.za](http://www.witsenterprise.co.za)

## A Matter of Materials.

By Isabel Bradley - Assistant Secretary, SAIT



Since the beginning of time, humanity's way of life has been dictated by the materials available. Driven by curiosity, ambition and imagination, he combined readily available materials to create tools, containers, and weapons. He used bone to make needles and musical instruments such as flutes; he wove grass containers; wooden handles were bound with leather thongs to stone axe- and arrow-heads; dugout canoes were made from felled trees. The list is endless.

He progressed to making containers of clay and pottery, then learnt to fire the pottery, making it more durable. Lead and tin were discovered. Though these metals were too soft to be used as weapons or tools, they were ultimately used to produce lead pipes for transporting water, drinking goblets and containers for liquids. Man has since learned that poisoning through the use of such vessels led to the downfall of the Roman Empire.



Lead Plumbing in Bath - the downfall of Rome

The next significant material discovered by man was copper, and its alloying with tin or other metals to create bronze. It is thought that the extraction of copper from its original ore, the technique of smelting, was discovered accidentally while chasing pottery; the furnace used for this purpose reached a far greater heat than that of normal cooking fires.

glazing pottery: the ovens used for this purpose reached a far greater heat than that of normal cooking fires. Tools and weapons made of bronze were far harder than those made of bone, wood and stone. Protective helmets, shields and body armour were made of bronze.

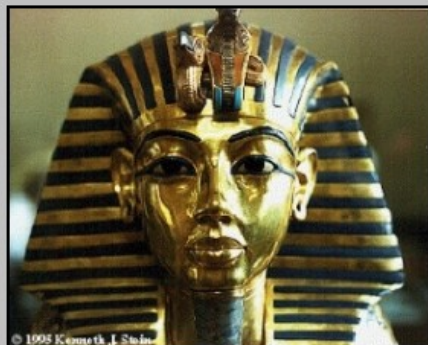


Man discovered the even harder properties of iron, and so moved quietly into the Iron Age. He learnt to mix iron with other materials, creating various strengths of steel. With this knowledge, he could manufacture, among other items, increasingly more powerful weapons. While trying to manufacture gold in 800 AD, Chinese chemists discovered gun powder, a mixture of sulphur, saltpeter and charcoal. This led to the creation of far more destructive weapons than those made of bone, wood, stone, bronze, and iron.



In the 1930s, after studying the properties of atoms, uranium and plutonium, scientists created the first nuclear war-heads, leading to the death of millions in two explosions in Hiroshima and Nagasaki in 1945. Since then, man lived in fear of further such detonations

throughout the 'cold war', and wars killing thousands have been fought over the perceived possession of nuclear weapons.



For as long as he has existed, man has used materials to create beauty for personal, religious and social use, as in the death mask of Tutankhamen pictured above.



Man continues to discover and create new materials, using physics, engineering, chemistry and mathematics to assist this quest. Materials are made for both specific and multiple purposes. For example, a new, ultra-lightweight metal of hollow nickel tubes could be used for absorption of sound, vibrations or shock, as well as to create cooling devices for computer components, and construction of vehicles, air and space craft. (See [http://www.techspot.com/news/46324-new-ultra-lightweight-metal-lattice-eyed-for-tech-](http://www.techspot.com/news/46324-new-ultra-lightweight-metal-lattice-eyed-for-tech-advancements.html)

[advancements.html](http://www.techspot.com/news/46324-new-ultra-lightweight-metal-lattice-eyed-for-tech-advancements.html))

Medical science continues to search for viable materials to be used as implants, replacement joints and medications to make life more comfortable for individuals suffering pain, disability and disease.

No matter what we touch or do, materials are an inescapable part of our lives; from paint to wallpaper, roof-tiles to bricks, plumbing and electrical fittings, the vehicles we travel in, and all modern technology in its infinite variety - everything owes its existence to the Science of Materials. Even the finer aspects of life, such as musical instruments, jewellery-making, fine art and sculpting, are impacted by the use of the appropriate materials. **Modern metal flute pic here.**

Understanding the composition of materials and the appropriate application is one of the key functions of Tribologists in the prevention of mechanical and technological failures in every sphere of modern life.



## Tribology in Action



**The Costa Concordia suffered enormous damage caused by unexpected and uncontrolled friction between the ship's hull and the rock that tore it open.**

### International Tribological Events:

**UNITI Mineral Oil Technology congress 20 & 21 March 2012:** Registration opened in October 2011. An early bird booking discount will be granted for registrations made before 15 December 2011. For further information go to the homepage at <http://www.umtf.de/> or contact Carmen Fogel at [Fogel@uniti.de](mailto:Fogel@uniti.de).

Keep your business moving ahead and be part of **ENEREXPO Vietnam 2012**. This valuable exhibition will be happening in **Hanoi, Vietnam from the 21st to the 23rd of March 2012**. Book your exhibition space today! Further information on ENEREXPO Vietnam 2012 is available on [www.enerexpovietnam.com](http://www.enerexpovietnam.com). To apply for a stand space at **ENEREXPO Vietnam 2012**, for information on affordable travel packages and for any other questions you might have, please contact Ms. Lisa Kuntze on: Tel: +27 (0)11 486 2775 or send an e-mail to: [lkuntze@germanchamber.co.za](mailto:lkuntze@germanchamber.co.za).

The Institution of Mechanical Engineers' **Tenth International Conference on Vibrations in Rotating Machinery (VIRM10)**, will take place from **11-13 September 2012** - for further information go to [www.imeche.org/events/c1326](http://www.imeche.org/events/c1326)

Each year the most influential players and decision makers of the International lubricants industry meet at the **International**

**"LUBRICANTS RUSSIA" Conference** in Moscow. We invite you to join them at this event, now in its 8th year. **To register please contact Elena Konstantinova, tel. +7 495 502-5433 or +7 495 778-9332 e-mail: [Konstantinova.Elena@rpi-inc.com](mailto:Konstantinova.Elena@rpi-inc.com) or visit our website <http://www.rpi-conferences.com/>**