Top 10 Materials Moments in History Announced

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More than 4,200 materials science and engineering professionals from 68 countries attended the TMS 2007 Annual Meeting & Exhibition in Orlando, Florida, Feb. 25-March 1, as the results of voting among the scientific community and the public at large revealed the Greatest Materials Moments in History.

The Periodic Table of Elements devised by Dmitri Mendeleev in 1864 was voted the number one materials moment, the indispensable reference tool for those in the field.

The record number of attendees, 4,253, at the 136th annual meeting, took part in 2,354 technical presentations in light metals; extraction, processing, structure and properties; and emerging materials; as well as the plenary sessions presenting the Greatest Materials Moments.

Leaders in industry, academia and government spoke at the plenary sessions, recapping 50 years of technological progress in materials. In his presentation regarding the future of materials science, Dr. Diran Apelian, a professor and director at the Worcester Polytechnic Institute in Massachusetts, stated, “The driving force for R&D in the United States has been primarily provided by the Department of Defense…Defense is a critical societal need; however, it is not the only need and a balance is needed to ensure that basic human needs are being addressed.” Those needs include energy, transportation, housing, food, recycling and health, according to Dr. Apelian.

The needs of past generations were reflected in materials developed and are evidenced in the remaining top 10 moments:

No. 2 Fe Smelting
Around 3500 B.C., Egyptians smelt iron for the first time, using tiny amounts, mostly for ornamental or ceremonial purposes. This is the first processing secret of what will become the world's dominant metallurgical material.

No. 3 Transistor
In 1948, John Bardeen, Walter H. Brattain and William Shockley invent the transistor. This becomes the building block for all modern electronics and the foundation for microchip and computer technology.

No. 4 Invention of Glass
Approximately 2200 B.C., northwestern Iranians invent glass. This becomes the second greatest nonmetallic engineering material (following ceramics).

No. 5 Optical Microscopy
In 1668, Anton van Leeuwenhoek develops optical microscopy, capable of magnifications of 200 times and greater. This enables study of the natural world invisible to the human eye.

No. 6 Modern Concrete
In 1755, John Smeaton invents modern concrete (hydraulic cement), which introduces the dominant construction material of the modern age.

No. 7 Crucible Steel Making
Around 300 B.C., metal workers in south India develop crucible steel making, which produces "wootz" steel. This becomes famous as Damascus sword steel hundreds of years later, inspiring artisans, blacksmiths and metallurgists for many generations.

No. 8 Cu Extraction and Casting
Approximately 5000 B.C., people in the region of modern Turkey discover that liquid copper can be extracted from malachite and azurite, and that the molten metal can be cast into different shapes. Extractive metallurgy is introduced.

No. 9 X-ray Diffraction
In 1912, Max von Laue discovers the diffraction of x-rays by crystals. This creates the means to characterize crystal structures and inspires the development of the theory of diffraction by crystals.

No. 10 Bessemer Process
In 1856, Henry Bessemer patents a bottom-blown acid process for melting low-carbon iron. This leads to the era of cheap, large tonnage steel, enabling massive progress in transportation, building construction and general industrialization.

More information about the Greatest Materials Moments can be found online at www.materialmoments.org .

Source: The Minerals, Metals & Materials Society