

Press release

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A new Golden Age of chemical engineering

The chemical engineering profession has entered a new Golden Age, according to Professor Phillip Westmoreland of North Carolina State University, and 2014 past president of the American Institute of Chemical Engineers (AIChE).

In his forthcoming plenary lecture during CHISA, the 21st International Congress of Chemical and Process Engineering, Westmoreland will note that several of the factors that enabled previous Golden Ages of the profession are currently evident.

A burst of demand and innovation is happening. Factors that contribute to Westmoreland's logic of the new Golden Age include new resources for fuel and chemicals, such as hydrofracking and biomass. Applied chemical biology has led to new medicines, medical tools and practices, and biocompatible and biomimetic materials. Dramatic advances in computers, networks, and mobile devices have transformed computing into a powerful cyber-infrastructure of data, design and communications.

Industry, generally, has moved towards process-based, high-productivity manufacturing which chemical engineers have pioneered, now including 3-D printing and computer-chip manufacturing. Finally, the systems approach central to chemical engineering finds increasing importance in industry, economics and public policy.

There are two previous Golden Ages of chemical engineering – the first is generally accepted to be in the period 1915 – 1929, which saw a geographical broadening in the chemical industry, a growing demand for petroleum-based fuels and emergence of the modern profession through the unit-operations concept.

In the 15 years after World War II, a second Golden Age occurred, again partly due to the high demand for petroleum products. New factors included widespread development of synthetic polymers, drugs, and other products. The profession also moved ahead because of intellectual advances within education which saw a growth in applied mathematics, physics, and reactor engineering.

There will be three other plenary lectures at CHISA. Professor Wei Ge, of the Institute of Process Engineering, Chinese Academy of Sciences, China, will speak on *Multi-scale Discrete Supercomputing – a game changer for process simulations?*

Professor Henrik Lund, of Aalborg University, Denmark, will discuss *Renewable Energy Systems – A Smart Energy Approach to the Choice and Modelling of 100% Renewable Solutions*.

And Jon-Paul Sherlock, Director of Product Development UK/US, AstraZeneca and Institution of Chemical Engineers (IChemE) technical vice president, is set to give his chemical engineer's perspective on the *Opportunities and challenges for the pharmaceutical industry*.

Ahead of his plenary lecture titled *Making Bio-oils: A Microcosm of the Opportunities and Challenges for a Golden Age of Chemical Engineering*, Westmoreland said: "My research on bio-fuel production illustrates both the exciting present as well as the challenges facing chemical engineering.

"Using biomass is a great advance toward sustainability and mitigating climate change if done right. If not, it could be a serious additional source of pollutants and could consume excessive water, land and energy.

"On the other hand, newly abundant oil and gas could wash away thoughtful examination of the science and implications of these more-sustainable choices. Chemical and process engineers have a professional and public obligation to engage in and even lead these discussions."

CHISA will be held jointly with the 17th Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction (PRES 2014) in Prague from 23 – 27 August 2014.

The congress is part of the series of chemical engineering conferences in Europe supported by the European Federation of Chemical Engineering (EFCE).

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About chemical engineers

Chemical, biochemical and process engineering is the application of science, maths and economics to the process of turning raw materials into everyday products. Professional chemical engineers design, construct and manage process operations all over the world. Oil and gas, pharmaceuticals, food and drink, synthetic fibres and clean drinking water are just some of the products where chemical engineering plays a central role.

About CHISA

The series of International Congresses, CHISA, has taken place in the Czech Republic since 1962. The objective of this joint event is to provide engineers, researchers, technologists, students and others a platform to present their latest results, interchange ideas and establish new collaborations. The Congress addresses the full spectrum of chemical and process engineering practice, including current trends and future needs.

About EFCE

Founded in 1953, The European Federation of Chemical Engineering (EFCE) is a non-profit-making association, whose object is to promote co-operation in Europe between non-profit-making professional scientific and technical societies in 30 countries for the general advancement of chemical engineering and as a means of furthering the development of chemical engineering. See www.efce.org