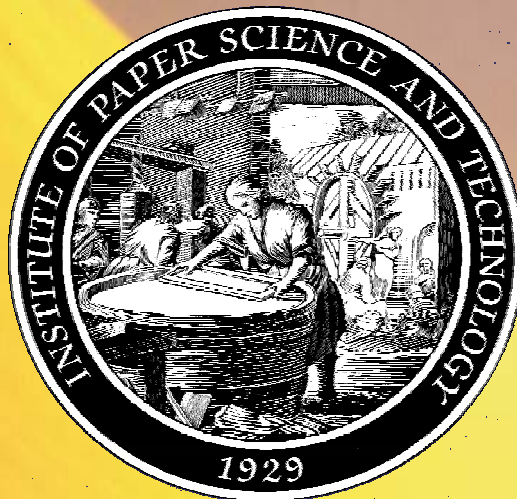


Continuing Education Opportunities

Kraft Pulping/Bleaching Process Chemistry and Corrosion Prevention Course

By

Drs. Art J. Ragauskas and Preet M. Singh
Institute of Paper Science and Technology



Continuing Education

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COURSE DESCRIPTION

Modern kraft pulping and bleaching operations involve a host of chemical operations that frequently require high temperatures, pressures, and aggressive chemical agents. The key to improved mill operations and high-quality products is the successful utilization of these chemical operations to delignify/brighten kraft pulps while minimizing operating cost, equipment corrosion, and environmental impact. This four-day course will review the fundamental chemical processes involved in modern kraft pulping and ECF bleaching operations to provide the fundamental knowledge necessary to maximize bleach-plant performance while extending the life-span of pulp/bleaching capital equipment. Upon completion of the course, attendees will have an enhanced understanding of kraft pulping and bleaching process chemistry and corrosion prevention.

COURSE PROGRAM

Day 1:

- Fundamentals of pulping and bleaching process chemistry
- Basics of corrosion science and technology

Day 2:

- Review of chemical pulping chemistry operations and impact on lignin, carbohydrates (including hexenuronic acids), and wood extractives
- Chemical pulping operations that influence pulp bleaching and environmental performance
- Corrosion control in the pulp mill

COURSE PROGRAM - continued

Day 3:

- Recovery boiler and related corrosion issues
- Fundamental chemical principles involved in ECF bleaching
- AOX formation, color, brightness development/ceiling
- Bleaching chemistry of A, O, D₀, and E* stages (E*:E, E+O, E+P, E+O+P)
- Corrosion issues/prevention in the bleach plant–Part 1

Day 4:

- Bleaching chemistry for brightness development in D₁, D₂, and P stages
- Corrosion issues/prevention in the bleach plant–Part 2
- Selection of metallic and nonmetallic materials to control corrosion
- Overview of future advances in kraft pulping, bleaching, and material science of future kraft mill operations

COURSE ATTENDEES

This course is designed to provide high-quality, basic knowledge in kraft pulping, bleaching, and preventative corrosion mill maintenance. The teaching material is tailored for the continuing education needs of operations and administrative personnel involved in the day-to-day operations of a kraft pulp mill. The course is designed for entry-level engineers, process chemists, and project engineers involved in pulping, bleaching, and/or maintenance areas of the mill. Other mill personnel and managers who require a basic understanding of kraft pulping and bleaching operations and related corrosion issues will benefit from this course.

COURSE BENEFITS

Attendees to this course will improve their operational knowledge concerning process chemistry and preventative corrosion maintenance programs. After graduating, process engineers and chemists will be able to:

- Develop integrated process chemistry control strategies that minimize bleaching costs and pulp/bleach-plant corrosion
- Reduce plant downtime
- Improve environmental protection strategies
- Optimize pulping operations to achieve maximum pulp bleachability and strength properties

Administrative mill management and accounting personnel will gain:

- Improved knowledge of the operational equipment requirements for modern kraft pulping and bleaching operations

COURSE MATERIAL

All participants will be issued a complete set of course notes and a CD copy of the educational materials. Class seminars and notes will be presented in English. Upon successful completion of this continuing education course, attendees will be awarded a course diploma and two continuing education units (CEU's) from the Institute of Paper Science and Technology.

COURSE FACULTY AND SPONSOR

The course will be provided by Professor A.J. Ragauskas and Associate Professor P.M. Singh, faculty at the Institute of Paper Science and Technology. These two faculty members have over 21 years of combined experience providing state-of-the-art research and education to the pulp and paper industry.



Professor Ragauskas' research/teaching expertise centers on kraft pulping and bleaching operations. He has extensively researched the relationship between kraft pulping and ECF pulp bleachability. Past research topics include improving the performance of A, O, D, and P stages. Recently, these research results have been utilized to develop new technologies to improve the performance of kraft pulp fibers. Ragauskas' research activities are funded by a consortium of pulp and paper companies. He has authored over 100 papers/patents in pulping and bleaching technology and has been an invited guest researcher to Skogsindustrins Tekniska Forskningsinstitut (STFi) in Stockholm, Sweden (1998), and a visiting professor at the Department of Forest Products and Chemical Engineering, Chalmers University of Technology, Sweden (2001). In 1999, Professor Ragauskas was the recipient of the Institute of Paper Science and Technology Presidential and Student awards for Best Teacher.



Dr. Singh is an associate professor of corrosion and materials engineering at the Institute of Paper Science and Technology. He has over fifteen years of experience in the field of corrosion. Dr. Singh has published over 50 papers in the field of corrosion and materials engineering. He has taught a number of short courses on corrosion control in the chemical process industry and the pulp and paper industry.

In addition, he is Principal Investigator on several industry-funded projects directed at improving the overall corrosion maintenance programs of modern kraft pulp mills.

COURSE LOCATION

The course will be held in modern conference facilities located conveniently near major pulp and paper manufacturing facilities.

COURSE SPONSOR

The Institute of Paper Science and Technology (IPST) was founded in 1929 and has established itself as the premier institute for the advanced study of pulp and papermaking processes in the United States. IPST is a privately funded graduate research institute whose scientific and educational purpose evolves from its unique relationship with the pulp and paper industry. The multidisciplinary program emphasizes chemical engineering, mechanical engineering, chemistry, biology, physics, and other natural sciences. The Institute has a student-to-faculty ratio of 3:1, offering students direct access to the Institute's faculty members and researchers, many of whom are world renowned for their commitment to innovation, education, and research. IPST was recently ranked the fifth most innovative research institution in the United States by the Research Foundation of the State University of New York.

Further course information can be acquired from Drs. P. Singh and A.J. Ragauskas by:

Email: **preet.singh@ipst.gatech.edu or arthur.ragauskas@ipst.gatech.edu**

Fax: **1-404-894-4778**

Phone: **1-404-894-5700**

Address: **Institute of Paper Science and Technology**
Georgia Institute of Technology
500 10th St., NW, Atlanta, GA, USA 30318