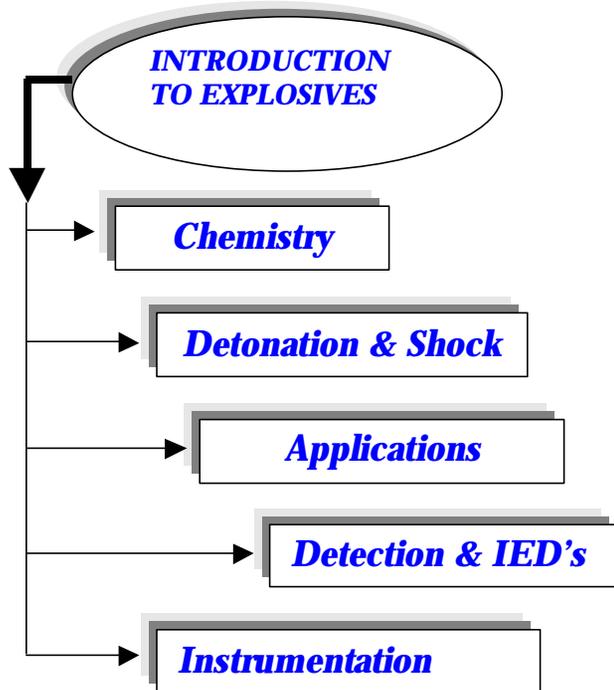


COURSE DESCRIPTION

This short course is a carefully structured introduction to the main topics in the field of explosives: principles and chemistry of explosives, detonation, explosive performance, and shock wave dynamics, explosion measurements and instrumentation, selected applications including detection and forensics. Both fundamental theory and practical aspects will be discussed. The topics will be presented by internationally renowned experts in their respective fields and will be addressed to an audience spanning a wide range of scientific backgrounds and levels.



Course Director: Dr. Jimmie Oxley, Professor of Chemistry & Co-Director of Forensic Science Partnership, University of Rhode Island, Kingston, RI; joxley@chm.uri.edu (401) 874-2103

Chemistry

Chemical makeup of explosives—minimum requirements to be an explosive and synthetic principles. Initiation of explosives—role of hot spots, critical diameter & detonation failure. Evaluation—strength and safety.

Detonation & Shock Wave Physics

Shock and detonation waves. CJ and ZND models of detonation. Fundamentals of elastic waves. Shock waves in solids. Spall & fracture. Shock growth & decay. Graphical solution of plane-shock transmission.

Applications

Mining and military—setting requirements to match the application. Gurney energies, overpressures, and simple models. The role of metallization.

Detection & IED's

Critique of the various technologies used in forensics and airport screening -- bulk and trace. New challenges to detection. Laboratory analysis

Instrumentation

Survey of diagnostic techniques, from the most common to the most recent. Basic principles and examples of evaluation of explosive performance and effects.

COURSE INSTRUCTORS

Dr. James Kennedy, Researcher, Los Alamos National Laboratory, Los Alamos, New Mexico.

Dr. Jimmie Carol Oxley, Professor, Chemistry, Co-Director of Forensic Science Partnership; University of Rhode Island.

Dr. Vilem Petr, Assistant Research Professor, Mining Engineering Department, Colorado School of Mines.

Mr. Fred Sandstrom, Senior Engineer, Applied Research Associates Inc.

Dr. Maurice Marshall, OBE, Assistant Director, Materials Technology; Ministry of Defence, UK.

REGISTRATION FEE

The registration fee of (US) \$1200 includes the course materials, coffee breaks, a reception and dinner. The fee must accompany the registration form. Space is limited and early registration is encouraged. The sponsor reserves the right to accept or decline registrations, and to cancel the course and return all registration fees if enrollment is insufficient. No refunds will be made to participants who fail to substitute or cancel by at least five (5) working days before the course starts.

Registrants are responsible for making their own lodging and travel arrangements.

For more information, visit
www.chm.uri.edu/forensics

REGISTRATION FORM

**Introduction to
Explosives Chemistry & Physics
May 11-13, 2004**

Name _____

Title _____

Affiliation _____

Phone _____ Fax _____

E-Mail _____

Address _____

City _____ State _____

Zip _____ Date _____

**Registration Fee: \$1200(US)
must accompany registration form**

[Make checks payable to:](#)

University of Rhode Island,
Chemistry Dept.

[Mail Payment and Registration to:](#)

University of Rhode Island
Chemistry Dept
Attn: Jimmie Oxley
Kingston, RI 02881

Phone/fax (401) 874-2103
explosive@chm.uri.edu

University of Rhode Island (URI) offers baccalaureate and graduate research in forensic and explosive chemistry. Research programs take advantage of the proximity of the RI State Crime Lab (on campus) and the Naval War College (30 min. away in Newport).

Colorado School of Mines (CSM) is a specialized baccalaureate and graduate research institution. CSM has a unique mission in energy, mineral, and materials science and engineering, and associated engineering and science fields.

Applied Research Associates, Inc. (ARA) provides in-depth and diversified research, engineering, technical support, and innovative practical solutions to problems in engineering and science.

Hazards & Explosives Research & Education

HERE designs specialty courses to meet the needs of chemists, engineers, & physicists working with energetic and hazardous materials and processes.

Introduction to Explosives

**Short Course on
Chemical & Physical Principles**



May 11-13, 2004

Kingston, RI

Presented by:

**University of Rhode Island
Chemistry & Forensic Science**

&

**Colorado School of Mines
Mining Engineering Department**

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