

## Preface

The aim of the Symposium was to provide an opportunity for engineers and scientists from engineering companies, research organizations and regulatory bodies to assess state-of-the-art models for heat and mass transfer phenomena relevant to industrial plant accident management. The focus was on those physical phenomena important in foreseeable accidents, e.g. heat propagation in fires, irradiation, convection, cloud formation, flashing or explosion mechanisms, pressure peak propagation, toxic substance diffusion. Thermodynamic and transport phenomena affecting foreseeable major accidents in chemical process plants and chemical substances storage were also considered. Particular attention was directed to chemical plants, fuel storage, and those industrial settlements which represent potentially great hazards to population in the event of accident. Heat and mass transfer phenomena relevant to accident prevention were also considered.

The issues covered included both the fundamental as well as the applied heat and mass transfer in: high-power fires (pool fires, jet fires), concentrated and vapour cloud explosions; in-vessel and breach-dependent transient thermohydraulics; runaway reactions in batch reactors; emergency pressure relief from chemical reactor runaway; handling of fluid discharge from reactors and storage vessels; release, propagation and dispersion of clouds of vapours and toxic gases; criteria for prevention of high power fires; engineered safety features; utilisation of passive and inherent safety to limit the hazard and the risk in industrial plants; prevention and control of effects from pressure waves due to explosion; and safe storage and handling of high-hazard toxic materials.

Forty-three papers were accepted for presentation. They were grouped into six technical sessions: Models and Experimental Investigations; Heat and Mass Transfer in Chemical Reactions; Clouds Dispersion; Two-phase Flows – Safety and Relief Valves; Fires and Explosions: Accident Analysis and Theoretical Investigations; Thermal-Hydraulic Aspects.

Two invited lectures were included in the programme: “Research and the Development for Process Safety” which was presented by Mr. A.J.J. Timmermans of the European Process Safety Centre, UK; and “Flixborough; Twenty Years Later: The lesson to be Learned”, presented by Prof. Venart of the Department of Mechanical Engineering, and of the Fire Science Centre, University of New Brunswick, Canada.

The papers published in this issue of the *Journal of Hazardous Materials*, represent a selection of the papers presented at the Symposium.

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Chairman of the Symposium