

FOCAPO 2003

Foundations of Computer-Aided Process Operations

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Contributed Session



Attracted 160 abstracts (!)

**99 posters/papers
from 27 countries**

Contributions from Academia/Research Centres,
Industries & Joint Collaborations

Paper Contributions by Country

Country	Academia	Industry	Collaboration
US	16	7	9
Germany	4	2	5
UK	8		3
Brazil	5		4
Netherlands	5		
Argentina	7		
Canada	1	1	3
China	3		2
Japan	2		2
Korea	4		
Spain	3		1
Russia	3		
Finland	2		
India	1		1

Paper Contributions by Country II

Country	Academia	Industry	Collaboration
Australia			1
Denmark			1
France			1
Hong Kong			1
Hungary	1		
Italy	1		
Kuwait			1
Mexico	1		
Poland	1		
Slovenia	1		
Sweden			1
Taiwan	1		
Turkey			1

Paper Contributions by Country: Summary

Country	Total
US	32
Germany, UK	11
Brazil, Netherlands	9
Argentina	7
Canada, China	5
Japan, Korea, Spain	4
Russia	3
Finland, India	2
Australia, Denmark, France, Hong Kong, Hungary, Italy, Kuwait, Mexico, Poland, Slovenia, Sweden, Taiwan, Turkey	1

Contributed Session

Papers have been classified in seven areas:

- ◆ Planning
- ◆ Scheduling
- ◆ Control
- ◆ Identification & Analysis
- ◆ Design
- ◆ Information Systems
- ◆ Computer Technologies

I. Planning

20 papers

- ◆ Supply Chain
- ◆ New Product Development
- ◆ Operations Optimization
- ◆ Batch Operations

... Some Highlights

- ◆ Increasing model size, realism, complexity
- ◆ Longer time horizons and larger systems
- ◆ Incorporation of financials and risk
- ◆ Incorporation of environmental considerations
- ◆ Focus on pharmaceutical portfolio planning
- ◆ Supply chain as a control problem

II. Scheduling

18 papers

- ◆ Mixed Integer and Optimization
- ◆ Uncertainty
- ◆ Batch Processing

... Some Highlights

- ◆ Continuous time representation
- ◆ Large scale optimization for real applications
- ◆ Uncertainty (robustness, stochastic,...)
- ◆ Need for improved integration, links to enterprise level and to batch standards and control
- ◆ Differentiation of methodology based on industry (specialization)

III. Control

12 papers

- ◆ Six Sigma
- ◆ Safety Analysis
- ◆ Hybrid Systems
- ◆ Control Optimization

... Some Highlights

- ◆ Improving process performance through increasingly intelligent monitoring and control
- ◆ Statistical analysis tools
- ◆ Gradually addressing supply chain dynamics (discrete event, hybrid systems,...)
- ◆ Formally addressing safety issues

IV. Identification and Analysis

10 papers

◆ Error Analysis

◆ Sensors
Location

... Some Highlights

- ◆ Extracting intelligence out of increasingly more and complex data and information
- ◆ Design of experiments
- ◆ From data reconciliation to model refinements
- ◆ Formally addressing issues of instrumentation and sensors (e.g. sensor networks)

V. Design

11 papers

◆ Synthesis

◆ Modeling
Issues

... Some Highlights

- ◆ From generation of batch recipes to synthesis of enterprise wide networks
- ◆ Energy and environmental issues in supply chain design and optimization
- ◆ Grass roots and retrofit issues

VI. Information systems

12 papers

◆ Systems
Integration

◆ Fault
Diagnosis

... Some Highlights

- ◆ Impact of and opportunities for advanced computing and information systems in supply chain management
- ◆ From data management to dynamic information management to risk management to the smart plant to the smart industry
- ◆ Standards (CAPE-Open) and tool development

VII. Computer Technologies

16 papers

- ◆ Optimization technologies
- ◆ Control technologies
- ◆ Modeling

... Some Highlights

- ◆ Optimization technology (large scale, mixed integer, nonlinear, algorithms) has come of age
- ◆ Novel optimization techniques (interval approaches, global approaches to nonlinear problems, multi-scale) are emerging
- ◆ Online/real time optimization
- ◆ Novel computational strategies to address uncertainty, variability, and risk in optimization technologies

Concluding Remarks

- ◆ Process operations technology is industry critical and growing
- ◆ Evidence of novelty and diversity of approaches (depth and breadth)
- ◆ Scope for generic technology and industry specialization
- ◆ Community aware of key challenges (variability, integration, details, business issues,...)
- ◆ Future is bright!!!!

Final Points ...

- ◆ 3 Awards (prizes to be won, \$500, \$250, \$250! – announcements at the banquet)
- ◆ Panel of 6 judges has been appointed (be at your poster!)
- ◆ Beer & Wine during the poster session today!
- ◆ Tomorrow the posters session continues from 1:00 until 2:30 (don't go away!)
- ◆ Enjoy the poster session!