

**DYCOPS 7 – Monday, July 5**

8:00 am – 9:15 am	<p>Opening Ceremony – Warren Seider &amp; Welcome Remarks – Sirish Shah                  Plenary 1: <a href="#">On-line Optimization via Off-line Optimization! - A Guided Tour to Parametric Programming and Control</a> [#217]                  Stratos Pistikopoulos and Vivek Dua, <i>Imperial College London and University College London</i>                  Session Chair – <a href="#">Wolfgang Marquardt</a></p>
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Coffee 9:15 am – 9:30 am

	<b>Ballroom A</b> Session MA1 Modeling and Identification Chairs: <a href="#">B. Huang</a> & <a href="#">B. Bakshi</a>	<b>Ballroom B</b> Session MA2 Monitoring and Fault Detection Chairs: <a href="#">M. Soroush</a> & <a href="#">J. Howell</a>	<b>Skyline BCD</b> Session MA 3 Advances In Control Chairs: <a href="#">B. Foss</a> & <a href="#">A. Rossiter</a>
9:45 am – 10:10 am	<a href="#">[#31] Plant test for MPC</a> Simone L. Kothare and Jorge A. Mandler <i>Air Products and Chemical Inc, USA</i>	<a href="#">[#46] Advanced monitoring of complex autocorrelated processes</a> Uwe Kruger, Yiqi Zhou, George W. Irwin <i>Queen's University Belfast, UK &amp; Shandong University, China</i>	<a href="#">[#93] Globally optimal nonlinear model predictive control</a> C. E. Long, P. K. Polisetty, and E. P. Gatzke <i>University of South Carolina, USA</i>
10:10 am – 10:35 am	<a href="#">[#140] Multi-objective input signal design of multi-harmonic signals for system identification</a> Sridharakumar Narasimhan and Raghunathan Rengaswamy <i>Clarkson University, USA</i>	<a href="#">[#105] Monitoring of flotation processes using multiresolutional multivariate image analysis (MR-MIA)</a> J. Jay Liu, John F. MacGregor, Carl Duchesne and Gianni Bartolacci <i>McMaster University, Canada &amp; Universite Laval, Canada &amp; COREM, Canada</i>	<a href="#">[#123] Plant and control-relevant nonlinearity analysis of a CSTR: a case study</a> Y. Shastri, T. Schweickhardt and F. Allgower <i>University of Illinois Chicago, USA &amp; University of Stuttgart, Germany</i>
10:35 am – 11:00 am	<a href="#">[#177] A new signal design tool for process model identification</a> V. C. Machado, J. O. Trierweiler, and A. R. Secchi <i>Federal University of Rio Grande do Sul, Brazil</i>	<a href="#">[#84] Fault detection and isolation in non-uniformly sampled systems</a> Weihua Li and Sirish Shah <i>University of Alberta, Canada</i>	<a href="#">[#143] Two-degree-of-freedom multirate controllers for nonlinear processes</a> Raymond A. Wright and Costas Kravaris <i>The Dow Chemical Company, USA &amp; University of Patras, Greece</i>
11:00 am – 11:25 am	<a href="#">[#59] Identifiability Analysis of a liquid-liquid phase-transfer catalyzed reaction system</a> Amos Ben-Zvi, P. James McLellan, and Kim B. McAuley <i>Queen's University, Canada</i>	<a href="#">[#34] To cascade or not to cascade?</a> Goradia D. B., M.W. Hermanto, S. Lakshminarayanan and G.P. Rangaiah <i>National University of Singapore</i>	<a href="#">[#181] System's non-linearity measurement based on the RPN concept</a> M. Farenzena and J. O. Trierweiler <i>Federal University of Rio Grande do Sul, Brazil</i>
11:25 am – 11:50 am	<a href="#">[#192] Low-order dynamics in a lattice model of thin film deposition using nonlinear principal component analysis</a> Martha A. Gallivan <i>Georgia Institute of Technology, USA</i>	<a href="#">[#120] Multivariate forecasting of batch evolution for monitoring and fault detection</a> Salvador Garcia-Munoz, Theodora Kourti and John F. MacGregor <i>McMaster University, Canada</i>	<a href="#">[#145] Complexity reduction of nonlinear systems for process control</a> Alejandro Vargas and Frank Allgower <i>University of Stuttgart, Germany</i>
11:50 am – 12:15 pm	<a href="#">[#194] Predictive control of thin film surface microstructure in a complex deposition</a> Dong Ni and Panagiotis D. Christofides <i>University of California Los Angeles, USA</i>	<a href="#">[#45] Advanced process diagnosis in complex systems using nonlinear variable reconstruction</a> David Antory, Uwe Kruger, George W. Irwin, and Geoffrey McCullough <i>Queen's University Belfast, UK</i>	<a href="#">[#42] Interaction between control and state estimation in nonlinear MPC</a> Morten Hovd and Robert R. Bitmead <i>Norwegian University of Technology and Science, Norway &amp; University of California San Diego, USA</i>

Lunch 12:15 pm – 1:30 pm (on own)

1:30 pm – 2:15 pm	<p><b>Ballroom A</b>  <b>Keynote 1: Control and Monitoring of Semiconductor Manufacturing Processes: Challenges and Opportunities [#215]</b>                  S. Joe Qin, Gregory Cherry, Richard Good, Jin Wang, and Christopher A. Harrison  <i>University of Texas at Austin, USA</i>  <b>Chair: N. Thornhill</b></p>	<p><b>Ballroom B</b>  <b>Keynote 2: Challenges in Polymerization Reactor Modeling and Optimization: A Population Balance Perspective [#208]</b>                  Costas Kiparissides, Aristotle University of Thessaloniki, Greece  <b>Chair: S. Pistikopoulos</b></p>
2:15 pm – 3:00 pm	<p><b>Ballroom A</b>  <b>Keynote 3: Perspectives on the Design and Control of Multiscale Systems [#96]</b>                  Richard Braatz, R.C. Alkire, E. Rusli and T.O. Drews  <i>University of Illinois Urbana-Champaign, USA</i>  <b>Chair: D. Bonvin</b></p>	<p><b>Ballroom B</b>  <b>Keynote 4: Model Reduction and Control in Reactor-Heat Exchanger Networks [#126]</b>                  Michael Baldea and Prodromos Daoutidis  <i>University of Minnesota, USA</i>  <b>Chair: C. Georgakis</b></p>

Coffee 3:00 pm – 3:30 pm

	<p><b>Ballroom A</b>                      Session MP 1                      Modeling and Identification  <b>Chairs: S. Jorgensen &amp; W. Larimore</b></p>	<p><b>Ballroom B</b>                      Session MP 2                      Design and Control  <b>Chairs: C. Swartz &amp; H.P. Huang</b></p>	<p><b>Ballroom BCD</b>                      Session MP 3                      Advances in Control  <b>Chairs: F Allgower &amp; J. Trierweiler</b></p>
3:30 pm – 3:55 pm	<p><b>[#30] Closed-loop time delay estimation of SISO processes for control performance monitoring</b>                  Christopher A. Harrison and S. Joe Qin  <i>University of Texas at Austin, USA</i></p>	<p><b>[#92] Robust and stable nonlinear control and design of a CSTR in a large operating range</b>                  Johannes Gerhard, Martin Mönnigmann and Wolfgang Marquardt  <i>RWTH Aachen, Germany</i></p>	<p><b>[#27] A design of PID controllers fused CMACs with neural networks</b>                  Kenji Takao, Ryota Kurozumi, Toru Yamamoto and Takao Hinamoto  <i>Hiroshima University, Japan</i></p>
3:55 pm – 4:20 pm	<p><b>[#36] Directional leakage and parameter drift</b>                  Morten Hovd and Robert R. Bitmead  <i>Norwegian University of Technology and Science, Norway &amp; University of California San Diego, USA</i></p>	<p><b>[#137] Lexicographic optimization based sensor network design for robust fault diagnosis</b>                  Mani Bhushan and Raghunathan Rengaswamy  <i>University of Alberta, Canada &amp; Clarkson University, USA</i></p>	<p><b>[#95] Bounding linear time varying hybrid systems with time events</b>                  Cha Kun Lee and Paul I. Barton  <i>MIT, USA</i></p>
4:20 pm – 4:45 pm	<p><b>[#107] Robust and efficient joint data reconciliation – parameter estimation using a generalized objective function</b>                  Yen Yen Joe, David Wang, Arthur Tay and Jose Romagnoli  <i>The National University of Singapore, University of Sydney, Australia &amp; Institute of Chemical &amp; Engineering Sciences Singapore</i></p>	<p><b>[#146] Process Design for Reduced Disturbance Sensitivity of Integrated Plants</b>                  Hong Cui Carlemalm, Yi Wu and Elling W. Jacobsen  <i>Royal Institute of Technology, Sweden</i></p>	<p><b>[#176] Novel tool for multi-model PID controller design</b>                  Flávio Faccin and Jorge O. Trierweiler  <i>Federal University of Rio Grande do Sul, Brazil</i></p>
4:45 pm – 5:10 pm	<p><b>[#182] Missing data treatment using iterative PCA and data reconciliation</b>                  S. A. Imtiaz, S. L. Shah and S. Narasimhan  <i>University of Alberta, Canada</i></p>	<p><b>[#166] Process design and control of a reactive distillation system</b>                  Pinky Panjwani, Myrian Schenk, Michael C. Georgiadis and Efstratios Pistikopoulos  <i>Imperial College London, UK</i></p>	<p><b>[#180] Predictive control of switched nonlinear processes with scheduled mode transitions</b>                  Prashant Mhaskar, Nael H. El-Farra and Panagiotis D. Christofides  <i>University of California Los Angeles, USA</i></p>
5:10 pm – 5:25 pm	<p><b>[#62] Specifying the directionality of fault propagation paths using transfer entropy</b>                  Margret Bauer, Nina F. Thornhill and Adrian Meaburn, <i>University College London, UK &amp; BP Chemicals, UK</i></p>	<p><b>[#196] Design and control for energy integration in a bio-process</b>                  Michael L. Luyben  <i>DuPont Engineering Technology, USA</i></p>	<p><b>[#183] Feedback control of surface roughness in a deposition process using a stochastic PDE*</b>                  Yiming Lou and Panagiotis D. Christofides  <i>University of California Los Angeles, USA</i></p>

## DYCOPS 7 – Tuesday, July 6

8:00 am – 9:00 am	Plenary 2: <b>On-line Industrial Implementation of Process Monitoring and Control Applications using Multivariate Statistical Technologies: Challenges and Opportunities</b> [#216] Michael S. Dudzic and Yale Zhang, <i>Dofasco Inc., Hamilton, Ontario, Canada</i> Session Chair – John MacGregor		
Coffee 9:00 am – 9:30 am			
	<b>Ballroom A</b> Session TA1 Modeling and Identification Chairs: <b>K. Muske &amp; S. Patwardhan</b>	<b>Ballroom B</b> Session TA2 Monitoring and Fault Detection Chairs: <b>A. Cinar &amp; M. Kano</b>	<b>Skyline BCD</b> Session TA3 Bioprocess: Modeling and Control Chairs: <b>C. Kravaris &amp; C. Rao</b>
9:30 am – 9:55 am	[#35] Closed-loop subspace identification an orthogonal projection approach B. Huang, S.X. Ding and S.J. Qin <i>University of Alberta, Canada</i> <i>University of Duisberg-Essen, Germany</i> <i>University of Texas at Austin, USA</i>	[#185] Robust constrained estimation via unscented transformation Pramod Vachhani, Shankar Narasimhan and Raghunathan Rengaswamy <i>Clarkson University, USA &amp; IIT-Madris, India</i>	[#50] Continuous-discrete observer design for a CHO-K1 cell culture in suspension Jens E. Haag and Alain Vande Wouwer <i>Faculte Polytechnique de Mons, Belgium</i>
9:55 am – 10:20 am	[#66] Subspace identification using the parity space Jin Wang and S. Joe Qin <i>University of Texas at Austin, USA</i> <i>Advanced Micro Devices, Inc., USA</i>	[#133] Detection and diagnosis of data reconciliation problems in an industrial chemical inventory system Zhengang Han, Sirish Shah, Shankar Narasimhan and Hasna Zaknoun <i>University of Alberta, Canada</i>	[#52] Design and practical use of probabilistic observers for mass-balance based bioprocess models Benoit Chachuat and Olivier Bernard <i>INRIA Comore, France and MIT, USA</i>
10:20 am – 10:45 am	[#199] Large sample efficiency for adaptx subspace systems identification with unknown feedback Wallace E. Larimore <i>Adaptics Inc., USA</i>	[#100] A systematic and fully automated procedure for water and element balancing over pulp and paper mills: a case study at Visy Tumut mill J.A. Romagnoli, T.D. Nguyen & M. Bennett <i>University of Sydney, Australia</i>	[#91] Population balance model for cellular processes in biological systems: biochemical and biomedical applications Charles David Immanuel <i>Imperial College, UK</i>
10:45 am – 11:10 am	[#170] Identification for decentralized MPC R.D. Gudi, J.B. Rawlings, A. Venkat, and N. Jabbar <i>Indian Institute of Technology, India</i> <i>Jordan Institute of Science and Technology</i> <i>University of Wisconsin Madison, USA</i>	[#179] Practical solutions to multivariate feedback control performance assessment Biao Huang and Steven X. Ding <i>University of Alberta, Canada</i> <i>University of Duisburg-Essen, Germany</i>	[#108] Preferential estimation via the tuning of the Kalman filter Levente Bodizs, Bala Srinivasan and Dominique Bonvin <i>Ecole Polytechnique Federale de Lausanne, Switzerland</i>
11:10 am – 11:35 am	[#70] Model-based autotuning system using ANN and relay feedback test Hsiao-Ping Huang, Jyh-Cheng Jeng and Feng-Yi Lin <i>National Taiwan University, Taiwan</i>	[#193] Bayesian estimation by sequential Monte Carlo sampling: application to high-dimensional nonlinear dynamic systems Wen-shiang Chen, Bhavik R. Bakshi, Prem K. Goel and Sridhar Ungarala <i>Ohio State University, USA</i> <i>Cleveland State University, USA</i>	[#155] Effects of cell population heterogeneity on the dynamics of cell populations Nikos V. Mantzaris <i>Rice University, USA</i>
11:35 am – 12:00 pm	[#69] Identification of algebraic and state-space models using genetic programming Kyaw Tun and S. Lakshminarayanan <i>National University of Singapore</i>	[#6] Correlation dimension and Lyapunov exponent based isolation of plant-wide oscillations Xiaoyun Zang and John Howell <i>University of Glasgow, UK</i>	[#160] Dynamic modeling of filamentous bulking in lab-scale activated sludge processes E.N. Banadda, I.Y. Smets, R. Jenne and J.F. Van Impe <i>Katholieke Universiteit Leuven, Belgium</i>

Lunch 12:00 pm – 1:30 pm (on own)

1:30 pm – 2:15 pm	<p><b>Keynote 5: Market-Oriented Scheduling, Economic Optimization and Stochastic Constrained Control of Continuous Multi-Grade Chemical Processes [#214]</b> Okko H. Bosgra, R. Tousain and D.H. van Hessem <i>Delft University of Technology, The Netherlands</i> Chair: M. Kothare</p>	<p><b>Keynote 6: Identification and Control of Gene Networks in Living Organisms via Supervised and Unsupervised Learning [#211]</b> Timothy Gardner and Michael E. Driscoll <i>Boston University, USA</i> Chair: M. Perrier</p>	
	<p><b>Ballroom A</b> Session TP 1 Control, Optimization and Scheduling Chairs: J. Rawlings &amp; T. Marlin</p>	<p><b>Skyline BC</b> Session TP 2 Batch Process Modeling and Control Chairs: D. Bonvin &amp; R. Braatz</p>	<p><b>Skyline DE</b> Session TP 3 Special Session on Impact of Biological Engineering on Process Control Education Chairs: T. Edgar &amp; M. Henson</p>
2:15 pm – 2:40 pm	<p><b>[#4] Optimal control of emulsion co-polymerization: application to a pilot-scale reactor under a DCS environment</b> B. Alhamad, R. Willis, J. A. Romagnoli and V. G. Gomes <i>University of Sydney, Australia</i></p>	<p><b>[#134] On-line particle size distribution control strategy in an emulsion co-polymerization reactor</b> Myung-June Park, Mustafa T. Dokucu and Francis J. Doyle III <i>University of California Santa Barbara, USA</i></p>	<p><b>[#206] Frontiers of Chemical Engineering: The systems approach</b> Tom Edgar and James Rawlings <i>University of Texas at Austin, USA and University of Wisconsin Madison, USA</i> (20 minutes)</p>
2:40 pm – 3:05 pm	<p><b>[#22] Direct sequential dynamic optimization with automatic switching structure detection</b> Martin Schlegel and Wolfgang Marquardt <i>RWTH Aachen University, Germany</i></p>	<p><b>[#19] Multivariate analysis for quality improvement of an industrial fermentation process</b> Leo Chiang, Arthur Kordon, Lawrence Chew, Duncan Coffey, Robert Waldron, Torben Bruck, Keith Haney, Annika Jenings, Hank Talbot <i>The Dow Chemical Company, USA</i></p>	<p><b>[#212] Integration of Biological Systems Content into the Process Dynamics and Control Curriculum</b> Frank Doyle – <i>UCSB</i> Bob Parker – <i>University of Pittsburgh</i> Mike Henson – <i>University of Massachusetts</i> (40 minutes)</p>
3:05 pm – 3:30 pm	<p><b>[#112] An agent-based framework for control of reactor networks with autocatalytic replicators</b> Eric Tataru, Fouad Teymour and Ali Cinar <i>Illinois Institute of Technology, USA</i></p>	<p><b>[#167] Multi-parametric nonlinear programming and the evaluation of implicit optimization model adequacy</b> Elaine T. Hale and S. Joe Qin <i>The University of Texas at Austin, USA</i></p>	<p>Panel Discussion: Future Directions for Systems Biology in Chemical Engineering Panelists: Bob Parker, Mike Henson Dave Polidori – <i>Entelos</i> Tim Gardner – <i>Boston University</i></p>
3:30 pm – 3:55 pm	<p><b>[#191] Inclusion of actuator saturation as complementarity constraints in integrated design and control</b> Rhoda Baker and Christopher L.E. Swartz <i>McMaster University, Canada</i></p>	<p><b>[#187] Iterative learning control with input shift</b> C. Welz, B. Srinivasan and D. Bonvin <i>Ecole Polytechnique Federale de Lausanne, Switzerland</i></p>	

## Ballroom B

3:55 pm – 6:00 pm

Poster Session TP4 – Refreshments

### Bioprocess Modeling and Control

[#16] Wavelet-based model reduction of breakage processes

Y. Liu and M.O. Tade

*The University of Birmingham, U.K*

*Curtin University of Technology, Australia*

[#75] Mathematical modeling for adipic acid crystallization process

Caliane B.B. Costa, Aline C. Costa and Rubens Maciel Filho

*State University of Campinas, Brazil*

[#101] Enhanced IMC for glucose control in type 1 diabetic patients

Y. Ramprasad, G.P. Rangaiah, and S.

Lakshminarayanan

*National University of Singapore*

[#161] A prototype model for Indole-3-Acetic Acid (IAA) production by *Azospirillum brasilense* SP245

Ilse Y. Smets, Kristel Bernaerts, Astrid Cappuyns, Ositadinma Ona, Jos Vanderleyden, Els Prinsen and Jan F. Van Impe

*Universiteit Leuven and Antwerp, Belgium*

*CMPG- Katholieke Universiteit Leuven, Belgium*

[#82] Monitoring and control based on a FIA-biosensor system with automatic correction

Luciane da Silveira Ferreira, Jorge Otávio

Trierweiler, Mauricio Bezerra de Souza Jr.

*Federal University of Rio Grande do Sul and*

*Federal University of Rio de Janeiro, Brazil*

[#51] A fast computational procedure for the predetermination of parameters in non-linear bioprocess models

Jens E. Haag and Alain Vande Wouwer

*Faculte Polytechnique de Mons, Belgium*

### Control, Optimization and Scheduling

[#195] Transfer function modeling and robust control of Chylla-Haase challenge control problem

Venkatarao Ryali and Kannan M. Moudgalya

*Indian Institute of Technology-Bombay, India*

[#190] Plant-wide optimal control with decentralized MPC

Aswin N. Venkat, James B. Rawlings, Stephen J.

Wright

*University of Wisconsin Madison, USA*

[#115] Optimal sensor selection for successful real-time optimization

W. Zhong and T. Marlin

*McMaster University, Canada*

[#171] Nonlinear optimal control using dynamic programming in cell space - application to nonlinear CSTR

Sridhar Ungarala, Zhongzhou Chen and Keyu Li

*Cleveland State University, USA*

[#81] Optimization strategy for maximizing production of cyclohexanol

Delba N.C., Melo, Eduardo C., Vasco de Toledo,

Salah D.M. Hasan, Rubens M. Filho

*State University of Campinas, Brazil*

[#168] A multi-level, control-theoretic framework for integration of planning, scheduling and rescheduling

S.A. Munawar, S.A and R.D. Gudi

*Indian Institute of Technology-Bombay, India*

[#25] Real-time optimal operation decisions for gas turbines

S. Alper Eker and Avinash Taware

*General Electric Global Research Center, USA*

### Modeling and Identification

[#55] An exchange language for process modeling and model management

Huaizhong Li, C. Peng Lam

*Edith Cowan University, Australia*

[#68] Use of BP neural network to predict hydrogen content in coal

L.C. Ju, M.O. Tade and J.N. Zhu

*Xian Jiaotong University, China*

*Curtin University, Australia*

[#73] Simulation of pulping process using neural networks and hybrid model

N.V. Polowski, H.C. Aguiar, R. Maciel Filho

*State University of Campina,, Brazil*

[#83] Use of bifurcation analysis for model identification purposes

M.P. Vega, B.K. Coimbra, M.J. Araújo and C.M.

Scheid

*Federal University of Rio de Janeiro, Brazil*

[#87] Parameter estimation for batch processes using a Bayesian approach

Zhen Lu, Julian Morris and Elaine B. Martin

*University of Newcastle, UK*

[#97] Using a dithering signal in the reference to improve the estimates from subspace identification methods on closed loop data

Geir Werner Nilsen and David Di Ruscio

*Telemark Institute of Technology, Norway*

[#104] Dynamic modeling of a three-phase catalytic slurry reactor considering the phase change phenomenon

Adriano Pinto Mariano, Eduardo Coselli Vasco de

Toledo, José Marcos Francisco da Silva, Rubens

Maciel Filho

*State University of Campinas, Brazil*

<p>[#169] Multiobjective optimization in <i>aspergillus niger</i> fermentations for selective product enhancements C. Mandal, G.K. Suraishkumar and Gudi, R.D. <i>Indian Institute of Technology, India</i></p> <p>[#10] Reference Trajectory Tracking of Superficial Temperature in Food Decontamination Ruben Zuniga, Lionel Boillereaux, Olivier Rouaud and Michel Havet <i>ENITIAA-GEPEA, France</i></p>		<p>[#132] Neural network-based identification of nonlinear adsorption isotherms Weihua Gao and Sebastian Engell <i>University of Dortmund, Germany</i></p> <p>[#174] Modeling and control of O<sub>2</sub>/CO<sub>2</sub> gas turbine cycle for CO<sub>2</sub> capture Lars Imsland, Dagfinn Snarheim, Ragnhild Ulfsnes, Olav Bolland, Bjarne A. Foss <i>Norwegian University of Science and Technology, Norway</i></p> <p>[#178] Which is the best criterion for identification of dynamic models ? J.O. Trierweiler and V.C. Machado <i>Federal University of Rio de Janeiro, Brazil</i></p> <p>[#198] Accelerated karhunen-loeve expansion applied to model reduction Vikram S. Shabde, Daguang Zheng, Karlene A. Hoo <i>Texas Tech University, USA and General Electric, USA</i></p>
<p><b>Monitoring and Fault Detection</b></p> <p>[#5] Observer-based supervision and fault detection of a FCC unit model predictive control system O.A.Z. Sotomayor, D. Odloak, E. Alcorta-Garcia, P. de Léon-Cantón <i>LSCP – Polytechnic School of the University of São Paulo, Brazil and FIME, Autonomous University of Nuevo León, Mexico</i></p> <p>[#26] A study on the selection of model dimensions and sensitivity of PCA-based fault detection Masayuki Tamura and Shinsuke Tsujita <i>Tokyo Gas Co., Japan</i></p> <p>[#63] On evaluating control performance on large data sets Alexander Horch and Friedrun Heiber <i>ABB Corporate Research and University of Stuttgart, Germany</i></p> <p>[#74] A filter based approach for estimation of PI achievable performance Mranal Jain and S. Lakshminarayanan <i>National University of Singapore</i></p>	<p><b>Advances in Control</b></p> <p>[#188] Fault-tolerant control of multi-unit process systems using communication networks Nael H. El-Farra, Adiwinata Gani and Panagiotis, D. Christofides <i>University of California Los Angeles, USA</i></p> <p>[#153] Fault diagnosis and fault tolerant control using reduced order models Seema Manuja, Sachin Patwardhan and Shankar Narasimhan <i>Indian Institute of Technology-Madras and Bombay India</i></p> <p>[#159] EKF and ANFIS estimator design of multicomponent batch distillation columns Uğur Yıldız, Evren Güner, Canan Özgen and Kemal Leblebicioğlu <i>Middle East Technical University, Turkey</i></p> <p>[#18] Internal model control of a physical vapor deposition effusion source S. Tobias Junker, Robert W. Birkmire, Francis J. Doyle III and M.J. Park <i>University of Newark, USA</i> <i>University of California, Santa Barbara, USA</i></p>	<p><b>Sensor Technologies</b></p> <p>[#103] Analysis of non-linear partial least squares algorithms S. Kumar, U. Kruger, E. B. Martin and A. J. Morris <i>University of Newcastle, UK and Queen's University Belfast, UK</i></p> <p><b>Industrial Applications</b></p> <p>[#129] State and parameter estimation in cement grinding circuits - practical aspects Renato Lepore, Alain Vande Wouwer, Marcel Remy and Philippe Bogaerts <i>Faculté Polytechnique de Mon, and Université Libre de Bruxelles, Belgium</i></p> <p>[#157] Automatic detection of stiction in actuators: a technique to reduce the number of uncertain cases M. Rossi and C. Scali <i>University of Pisa, Italy</i></p> <p>[#172] Simplified first-principles modeling of glass furnaces for control purpose O. Achet, P. Riedinger, C. Iung, O. Malassé <i>Institut National Polytechnique de Lorraine, France</i></p>

[#110] The high-pressure polyethylene process monitoring using PCA based Bayesian classification

Jialin Liu

*Fortune Institute of Technology, Taiwan*

[#119] Modeling temperature-induced spectral variations in chemical process monitoring

Zeng-Ping Chen, Julian Morris and Elaine Martin

*University of Newcastle upon Tyne, UK*

[#130] Monitoring of distillation column operation through self-organizing maps

Ng Yew Seng and Rajagopalan Srinivasan

*National University of Singapore*

[#144] Data-driven quality improvement: handling qualitative variables

Manabu Kano, Koichi Fujiwara and Shinji Hasebe, Hiromu Ohno

*Kyoto University and Kobe University, Japan*

[#184] Nonlinear residual feedback observer for process fault diagnosis

Pramod Vachhani and Raghunathan Rengaswamy

*Clarkson University, USA*

[#200] Object-based diagnostic network based on statistical learning

Sang-Oak Song and En Sup Yoon

*Seoul National University, Korea*

[#139] Implicit relations and discrete events in process simulation

David Wilson and Christian Haag

*Auckland University of Technology, New Zealand*

*Karlstad University, Sweden*

[#72] MPC design for constrained multivariable systems under actuator backlash

H. Zabiri and Y. Samyudia

*McMaster University, Canada*

[#78] Learning control applied to pH plant

S. Syafiie, F. Tadeo and E. Martinez

*University of Valladolid, Spain*

*Consejo Nacional de Investigaciones, Argentina*

[#164] Dynamic optimization of processing systems with mixed degrees of freedom

Olaf Stursberg

*University of Dortmund, Germany*

[#33] Neural predictive control design for uncertain nonlinear systems

Wei Wu and Jun-Xian Chang

*National Yunlin University of Science and*

*Technology, Taiwan*

[#37] Design of robust controller for active noise control systems

J. Poshtan, F. Taringoo, A. Nasiri

*Iran University of Science and Technology*

[#88] A Smith predictor enhanced PID controller

S. B. Hung, C. C. Yu and Y.C. Cheng

*National Taiwan University of Science and*

*Technology, Taiwan*

[#28] A ratio control architecture for set-point following and load disturbance rejection

Antonio Visioli and Massimiliano Veronesi

*University of Brescia, Italy and Yokogawa Italia*

[#3] Improving the performance of dual rate control in the absence of a fast rate model

J.A. Rossiter, T. Chen and S.L. Shah

*University of Sheffield, UK*

*University of Alberta, Canada*

[#11] Integrating process indicators with monitoring method hybrids

Sirkka-Liisa Jämsä-Jounela and Tiina Komulainen

*Helsinki University of Technology, Finland*

[#60] Nonlinear friction compensation design for suppressing stick slip oscillations in oil well drillstrings

F. Abdulgalil and H. Siguerdidjane

*École Supérieure D'Électricité, France*

## Batch and Semi-batch Processes

[#122] Model predictive control for batch processes using latent variable methods

Jesus Flores-Cerrillo and John F. MacGregor

*McMaster University, Canada*

[#135] Time optimal control of the molecular weight in a semi batch emulsion polymerization

R. Gesthuisen, K. Dadhe, S. Kraemer and S. Engell

*University of Dortmund, Germany*

[#53] A stage-based monitoring method for batch process with minimal reference data

Ningyun Lu, Yi Yang, Fuli Wang and Furong Gao

*The Hong Kong University of Science & Technology,*

*Kowloon, Hong Kong and Northeastern University, P.*

*R. China*

## Design and Control

[#71] Controller design for integrating processing in SISO or MIMO systems

Hsiao-Ping Huang, Feng-Yi Lin, Jyh-Cheng Jeng

*National Taiwan University, Taiwan*

[#114] Integrated design of the process and control of supercritical extraction plants with re-circulation

Lázaro Gorostiaga, Francisco Gutiérrez, Enrique

Baeyens, Gregorio Antolin and José R. Perán

*Centro de Automatización, Robótica y Tecnologías de*

*la Información y de la Fabricación, Spain*

*Universidad de Valladolid, Spain*

## DYCOPS 7 – Wednesday, July 7

8:00 am - 9:00 am	Plenary 3: <b>Identification for Control: Achievements and Open Problems [#213]</b> Michel Gevers, <i>Université Catholique de Louvain, Belgium</i> <b>Session Chair – Sirish Shah</b>		
Coffee			
	<b>Ballroom A</b> Session WA1 Modeling and Identification <b>Chairs: M. Hovd &amp; S. Lakshminarayanan</b>	<b>Ballroom B</b> Session WA2 Industrial Applications <b>Chairs: B. Cott &amp; G. Duennebieer</b>	<b>Skyline BCD</b> Session WA 3 Advances in Control <b>Chairs: F. Gao &amp; S. Engell</b>
9:30 am – 9:55 am	[#44] On model selection for state estimation for nonlinear systems Robert Bos, Xavier Bombois, and Paul M. J. Van den Hof <i>Delft University of Technology, The Netherlands</i>	[#12] On-board diagnostic and fault detection strategies for an automotive three-way catalyst Kenneth R. Muske and James C. Peyton Jone <i>Villanova University, USA</i>	[#2] A fast suboptimal multi parametric quadratic programming algorithm for predictive control J.A. Rossiter <i>University of Sheffield, UK</i>
9:55am – 10:20 am	[#65] Gaussian Process Regression for Batch Process Modeling Xiaoling Ou, Julian Morris and Elaine Martin <i>University of Newcastle, UK</i>	[#29] Industrial experience on process transition monitoring for continuous steel casting operation Yale Zhang and Michael S. Dudzic <i>Dofasco Inc., Canada</i>	[#128] Embedded model predictive control for system-on-a-chip applications Leonidas G. Bleris, Mayuresh V. Kothare, Jesus Garcia, and Mark G. Arnold <i>Lehigh University, Bethlehem, PA, USA</i>
10:20 am – 10:45 am	[#94] Design of an on-line titrator for nonlinear pH control A.D. Kalafatis, L. Wang and W.R. Cluett <i>Aspen Tech, Canada</i> <i>RMIT University, Australia and</i> <i>University of Toronto, Canada</i>	[#54] Practical model and detection algorithm for valve stiction Manabu Kano, Hiroshi Maruta, Hidekazu Kugemoto, and Keiko Shimizu <i>Kyoto University, Japan</i> <i>Sumitomo Chemical Co. Ltd., Japan and</i> <i>Toshiba Corporation, Japan</i>	[#149] Numerical methods for large scale moving horizon estimation and control John Bagterp Jørgensen, James B. Rawlings, and Sten Bay Jørgensen <i>University of Wisconsin, Madison, USA</i> <i>Technical University of Denmark, Denmark</i>
10:45 am – 11:10 am	[#148] Estimating the prediction uncertainty of dynamic neural network process models Kai Dadhe, Ralf Gesthuisen and Sebastian Engell <i>University of Dortmund, Germany</i>	[#85] Detection and quantification of control valve stiction M.A.A.S. Choudhury, S. L. Shah and N. F. Thornhill <i>University of Alberta, Canada and</i> <i>University College London</i>	[#150] Robust predictive control based on neighboring extremals S. Gros, B. Srinivasan and D. Bonvin <i>Ecole Polytechnique Federale de Lausanne,, Switzerland</i>
11:10 am – 11:35 am	[#151] Identification of nonlinear observers for multivariable systems subjected to unmeasured disturbances M. Srinivasarao, Raja Venkatasubramanian, and Sachin C. Patwardhan <i>Indian Institute of Technology-Bombay, India</i>	[#90] Multivariable control of multi-zone chemical mechanical polishing S. J. Shiu, C. C. Yu, S. H. Shen and A. J. Su <i>National Taiwan University, Taiwan</i>	[#163] A fast, easily tuned, SISO, model predictive controller Gabriele Pannocchia, Nabil Laachi and James B. Rawlings <i>University of Pisa, Italy</i> <i>University of Wisconsin Madison, USA</i>
11:35 am – 12:00 pm	[#113] Error detection and control in grey-box identification of distributed parameter processes Yi Liu and Elling W. Jacobsen <i>Royal Institute of Technology, Sweden</i>	[#165] System analysis of complex reactor behavior – a case study Berit Floor Lund, Bjarne A. Foss, Kjell Ragnar Lovasen and Birger Erik Ydstie <i>NTNU, Norway &amp; Carnegie University, USA</i>	[#203] Control system selection: A measure of control quality loss in analytical control Masoud Soroush and Yiannis Dimitratos <i>Drexel University, USA</i> <i>DuPont Engineering, USA</i>

Lunch 12:00 pm – 1:15 pm (on own)

<p>1:15 pm – 2:00 pm</p>	<p><b>Ballroom A</b>  <b>Keynote 7: Process Engineering is Changing- You Can Sense It!</b>                  [#209]                  Dr. Frank K. Schweighardt and Dave Zatzko  <i>Air Products &amp; Chemicals, Inc., USA</i>  <b>Chair: L. Ricker</b></p>	<p><b>Ballroom B</b>  <b>Keynote 8: Nonlinear Model Predictive Control Algorithm for Breast Cancer Treatment</b> [#186]                  Jeffrey A. Florian, Jr., J. L. Eiseman and Robert S. Parker  <i>University of Pittsburgh, USA</i>  <b>Chair: D. Dochain</b></p>
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Coffee 2:00 pm – 2:30 pm

	<p><b>Ballroom A</b>                      Session WP 1                      Control, Optimization and Scheduling  <b>Chairs: C. Scali &amp; J. Hahn</b></p>	<p><b>Ballroom B</b>                      Session WP 2                      Sensor Technology  <b>Chairs: L. Ricker &amp; J. MacGregor</b></p>	<p><b>Skyline BCD</b>                      Session WP 3                      Bioprocess Modeling and Control  <b>Chairs: R. Gudi &amp; P. Dadoutidis</b></p>
<p>2:30 pm – 2:55 pm</p>	<p>[#79] Using optimization to detect snowball effects                      Thomas Mc Avoy  <i>University of Maryland, USA</i></p>	<p>[#17] Optimal sensor location for nonlinear dynamic systems via empirical Gramians                      Abhay K. Singh and Juergen Hahn  <i>Texas A&amp;M University, USA</i></p>	<p>[#67] Optimal periodic control of a drug delivery system                      Subbarao Varigonda, Tryphon T. Georgiou, Ronald A. Siegel and Prodromos Daoutidis  <i>University of Minnesota, USA and United Technologies Research Center, USA</i></p>
<p>2:55 pm – 3:30 pm</p>	<p>[#98] Sensitivity-based solution updates in closed-loop dynamic optimization                      Jitendra V. Kadam and Wolfgang Marquardt  <i>RWTH Aachen University, Germany</i></p>	<p>[#57] Robust dynamic state estimation of a binary distillation column                      Roberto Baratti, Massimiliano Barolo, Fabrizio Bezzo and Stefania Tronci  <i>Università degli Studi di Cagliari, Italy and Università di Padova, Italy</i></p>	<p>[#80] Robust global stabilization of continuous bioreactors                      LEMONIA SYROU, IASSON KARAFYLLIS, KATERINA STAMATELATOU, GERASIMOS LYBERATOS and COSTAS KRAVARIS  <i>University of Patras, Greece and University of Athens, Greece</i></p>
<p>3:20 pm – 3:45 pm</p>	<p>[#117] Dantzig-Wolfe decomposition and large-scale constrained MPC problems                      Ruoyu Cheng, Fraser Forbes and W. San Yip  <i>University of Alberta, Canada and Alberta Research Council, Canada</i></p>	<p>[#48] A critical comparison of linear and nonlinear property estimators in inferential control                      Gabriele Pannocchia, Paolo Leoni and Alessandro Brambilla  <i>University of Pisa, Italy</i></p>	<p>[#125] Putting the "control" in metabolic control analysis                      Christopher Rao, Herbert Sauro and Adam Arkin  <i>University of California Berkeley, USA and Keck Graduate Institute, USA</i></p>
<p>3:45 pm – 4:10 pm</p>	<p>[#116] Control structure design to achieve multiple performance criteria                      Y. Cai and T. Marlin  <i>McMaster University, Canada</i></p>	<p>[#121] Multivariate image analysis for inferential sensing: a framework                      Honglu Yu and John F. MacGregor  <i>McMaster University, Canada</i></p>	<p>[#162] Event software sensor and adaptive extremum seeking alternatives for optimizing a class of fed-batch bioreactors                      Manuel J. Betancur, Mariana Titica, Jaime A. Moreno, Denis Dochain and Martin Guay  <i>Universidad Nacional Autónoma de México, Université Catholique de Louvain, Belgium, Queen's University, Canada, Universidad Pontificia Bolivariana, Colombia and University of Stuttgart, Germany</i></p>

4:15 pm – 4:30 pm – Closing Ceremony – **Ballroom B**