

ICL-QUESTIONNAIRE

NAME: Lorenz T. Biegler
PRESENT POSITION US:
Bayer Professor of Chemical Engineering
Carnegie Mellon University

GRANT PERIOD: 10/1/06-12/31/06
BORN: Sept. 10, 1956, Chicago, IL
LANGUAGES: English, German

GERMAN HOST INSTITUTION

Interdisciplinary Center for Scientific Computing
Ruprecht-Karls-University of Heidelberg

ACADEMIC DISCIPLINE

Process Systems Engineering, Chemical Engineering

AREAS OF RESEARCH

Optimization of Chemical Processes, Nonlinear Programming, Dynamic Systems, Nonlinear Model
Predictive Control, Parameter Estimation and Model Validation

POSSIBLE LECTURE TOPICS

Advanced Nonlinear Programming Algorithms
Dynamic Optimization
Nonlinear Model Predictive Control
Parameter Estimation
Treatment of Uncertainty for Steady State Process Optimization

ACADEMIC TRAINING AND DEGREES

University of Wisconsin - Madison	Ph.D. - Chemical Engineering
University of Wisconsin - Madison	M.S. - Chemical Engineering
Illinois Institute of Technology	B.S. - Chemical Engineering

PREVIOUS POSITIONS

Carnegie Mellon University, Assistant, Associate Professor (1981 - 1990)
Sandia National Laboratories, Computer Science Research Institute, Member (2000-)
Air Products and Chemicals, Inc., Sabbatical Visiting Professor (1997-98)
Argonne National Laboratory, Argonne, IL, Math and Computer Science Division, Scientist-in-Residence
(1990-91)

PUBLICATIONS (selected)

Biegler, L. T., I. E. Grossmann and A. W. Westerberg, *Systematic Methods of Chemical Process Design*, Prentice-Hall, Upper Saddle River, NJ (1997)

Arvind U. Raghunathan and Lorenz T. Biegler, "Interior point methods for Mathematical Programs with Complementarity Constraints (MPCs)," *SIAM J. Optimization*, 15, 3, pp. 720-750 (2005)

Xu, C., P. M. Follmann, L. T. Biegler and M. S. Jhon, "Numerical Simulation and Optimization of a Direct Methanol Fuel Cell" *Computers and Chemical Engineering*, 29, 8, pp. 1849-1860 (2005)

Laird, C. D., L. T. Biegler, B. van Bloemen Waanders, R. A. Bartlett, "Time Dependent Contaminant Source Determination for Municipal Water Networks Using Large Scale Optimization," *ASCE Journal of Water Resource Management and Planning*, 131, 2, p. 125 (2005)

Kameswaran, S., G. Staus and L. T. Biegler, "Parameter Estimation of Core Flood and Reservoir Models," *Computers and Chemical Engineering*, 29, 8, pp. 1787-1800 (2005)

Waechter, A., and L. T. Biegler, "On the Implementation of an Interior Point Filter Line Search Algorithm for Large-Scale Nonlinear Programming," *Mathematical Programming*, 106, 1, pp. 25-57 (2006)

Flores-Tlacuahuac, A., L. T. Biegler and E. Saldivar-Guerra, "Dynamic Optimization of HIPS Open-Loop Unstable Polymerization Reactors," *I & EC Research*, 44, 8, pp. 2659-2674 (2005)

Martinsen, F, Biegler, L T, Foss, B. A., "A new optimization algorithm with application to nonlinear MPC," *Modelling, Identification and Control*, 2005; 26 (1) p. 3-22

Hong, W., S. Wang, P. Li, G. Wozny, L. T. Biegler, "Quasi-Sequential Approach to Large-Scale Dynamic Optimization Problems," *AIChE Journal*, 52, 1, p. 255 (2006)

Ko, Daeho, Ranjani Siriwardane and Lorenz T. Biegler, "Optimization of Pressure Swing Adsorption and Fractionated Vacuum Pressure Swing Adsorption Processes for CO₂ Sequestration," *Ind. Eng. Chem. Res.*, 44, 8084-8094 (2005)

Lang, Y-D., and L. T. Biegler, "Large-scale nonlinear programming with a CAPE-OPEN compliant interface," *Chemical Engineering Research and Design* (Trans. IChemE, Part A), 83, pp. 718-723 (2005)

Osorio, D., J. R. Pérez-Correa, L. T. Biegler and E. Agosin, "Optimization of Wine Still Operation," *Journal of Agricultural and Food Chemistry*, 53(16); 6326-6331 (2005)

Arrieta-Camacho, J. J. and L. T. Biegler, "Real Time Optimal Guidance of Low-Thrust Spacecraft: An Application of Nonlinear Model Predictive Control," *Annals of New York Academy of Science*, 1065, p. 174 (2006)

Kawajiri, Y. and L. T. Biegler, "Optimization Strategies for Simulated Moving Bed and PowerFeed Processes," *AIChE Journal*, 52(4):1343-1350, (2006)
