

Chunhui Zhao received the B.S. degree in automation from Northeastern University, Shenyang, China, in 2003. She received the M.S. and Ph.D. degrees in Control Theory and Control Engineering from Northeastern University, Shenyang, China, in 2006 and 2009 respectively.

She was a research associate with the HongKong University of Science and Technology, Hong Kong (Jan. 2009-June 2010), postdoctoral fellow with University of California, Santa Barbara, CA, USA (June 2010-Jan. 2012) and adjunct investigator with Sansum Diabetes Research Institute, Santa Barbara, CA, USA (June 2010-Jan. 2012). She is currently Professor with Department of Control Science and Engineering, Zhejiang University, Hangzhou, China. Her research interests include multivariate statistical analysis and modeling; Chemical process monitoring; fault detection and diagnosis; quality interpretation and prediction; artificial pancreas, glucose monitoring and prediction for type 1 diabetes. She has published over 50 SCI-cited international journal papers in the relevant areas.

Chunhui Zhao

Professor, IEEE Senior Member

State Key Laboratory of Industrial Control Technology,
Department of Control Science and Engineering,
38 Zheda Road, Zhejiang University, Hangzhou, 310027, China

Email chzhao@zju.edu.cn

Tel 13588312064

Fax 86-571-87951879

Education

Sept. 1999—Jul. 2003 B.S. degree, Automation, Northeastern University, China.

Sept. 2003 — Mar. 2006 M.S. degree, Control Theory and Control Engineering,
Northeastern University, China.

Advisor: Prof. Fuli Wang

Mar. 2005—Jan. 2009 Ph.D, Control Theory and Control Engineering, Northeastern
University, China.

Advisor: Prof. Fuli Wang

Professional Experience

Jan. 2009—June, 2010 Research Associate, Department of Chemical and Biomolecular
Engineering, The Hong Kong University of Science and Technology.

Advisor: Prof. Furong Gao

June, 2010 — Jan. 2012 Postdoctoral Fellow, Department of Chemical Engineering,
University of California, Santa Barbara, CA, USA

Adjunct Investigator, Sansum Diabetes Research Institute, Santa Barbara,
CA, USA

Advisor: Professors Dale E. Seborg and Francis J. Doyle III

Jan. 2012—Dec. 2014 Distinguished research fellow, Department of Control Science and
Engineering, Zhejiang University

Jan. 2015 — Professor, Department of Control Science and Engineering, Zhejiang
University

Research Interests

My research interests include, but are not limited to

- Data analysis and modeling;
- Process monitoring; Fault detection and diagnosis; Quality prediction and control
- Artificial pancreas, glucose monitoring and control for type 1 diabetes.

Research Supervision

List of Graduate Students Supervised

Name	Type	Details	Status	Co-supervisor or comments
Yan Qin	PhD	Process control and optimization	On-going	Furong Gao
Luping Zhao	PhD	Process monitoring and quality prediction	On-going	Furong Gao
Bai Li	PhD		On-going	
Hong Zhao	PhD	Glucose monitoring, prediction and control	On-going	
Chengxia Yu	MPhil	Glucose prediction and control for Type 1 diabetes	On-going	
Wenqing Li	MPhil	Batch process monitoring and fault diagnosis	On-going	Youxian Sun
Chenrong Li	MPhil	Glucose prediction and control	On-going	
Guangjian Song	MPhil	Glucose monitoring and fault detection for Type 1 diabetes	On-going	
Nannan Wang	Bachelor	Glucose control based on model migration and model predictive control	Completed (2014.6)	
Jiayi Zhou	Bachelor	A global model for glucose prediction based on empirical modelling and frequency band separation	Completed (2013.6)	

Teaching

Postgraduate level:

Applied multivariate statistical analysis since 2012 fall semester

Undergraduate student research projects

Zhejiang University students' quality training program (SQTP): 2013.5-2013.10

Class adviser:

Engineering experimental class(Information)-Class No. 1214

Awards and Recognitions

- [1]. July 2, 2014 Finalist for Steve and Rosalind Hsia Best Biomedical Paper Award 2014
Title: Sensor Abnormality Detection based on Global Prediction Model for Type I Diabetes (the first author and corresponding author)
- [2]. June 1, 2014 Finalist for Zhang Si-Ying Outstanding Youth Paper Award of CCDC 2014
Title: Fault subspace selection and analysis of relative changes based reconstruction modeling for multi-fault diagnosis (the sole author)
- [3]. Mar. 17, 2014 Young Author Support (EUR 1000), the supervisor, IFAC Foundation (2014 IFAC World Congress)
- [4]. 2014 Student Travel Award (\$300), the supervisor, ACC 2014
- [5]. Aug. 4, 2013 Best Paper Award of Academician Zhongjun Zhang, China: Quality-relevant fault diagnosis with concurrent phase partition and analysis of relative changes for multiphase batch processes, China Association of Automation (the first author and corresponding author)
- [6]. June 26, 2013 Finalist of The Shimemura Young Author Award, A sub-principal component of fault detection (PCFD) modeling method and its application to online fault diagnosis, the 9th Asian Control Conference (Istanbul, Turkey). (the first author and corresponding author)
- [7]. Jan. 24, 2013 Outstanding Achievement Award for Scientific Research in Universities and Colleges (Science and Technology): Natural Science Award, the first prize (5/6).
- [8]. Dec. 27, 2012 New Century Excellent Talents in University.
- [9]. Aug. 12, 2012 Best Paper Award of Academician Zhongjun Zhang, China: Multiple-time-region (MTR) PCA Modeling for Fault Diagnosis With Application to the Tennessee Eastman Process, China Association of Automation (the first author and corresponding author)
- [10]. Feb. 10, 2012 Outstanding Achievement Award for Scientific Research in Universities and Colleges (Science and Technology): Natural Science Award, the second prize (5/5).
- [11]. Nov. 2011 Top 100 Excellent Doctor Thesis of China Nomination Award
- [12]. Dec. 2010 Excellent Doctor Thesis Prize of Liaoning Province
- [13]. Nov. 30, 2009 Excellent Doctor Thesis Prize of Northeastern University
- [14]. 2009 Excellent Doctor Thesis Prize of Northeastern University

[15]. July 6, 2008 Asian Student Scholarship Programme, IFAC WC 2008

Grants

PI:

- 2015.1 - 2017.12 ¥ 1000,000 National Science Fund for Excellent Young Scholars (No. No. 61422306), China: Fundamental research on batch process monitoring and fault diagnosis.
- 2015.1 - 2019.12 ¥ 1460,000(Total: ¥ 3650,000) National Natural Science Foundation of China-Key Program (No. 61433005), China: Modeling and control methods and application for high-efficiency operation of batch processes.
- 2014.1 - 2014.12 \$25,000 International cooperative project: Glucose monitoring, prediction and control in Artificial Pancreas
- 2013.1 - 2016.12 ¥ 850,000 National Natural Science Foundation of China (No. 61273166), China: Survey on glucose monitoring and prediction in Artificial Pancreas.
- 2013.1 - 2016.12 ¥ 300,000, Excellent Youth Foundation of Zhejiang Scientific Committee: Survey of multivariate statistical monitoring for batch processes.
- 2013.1-2015.12 ¥ 40,000 Specialized Research Fund for the Doctoral Program of Higher Education of China (20120101120182): Multivariate statistical analysis based glucose prediction for diabetes.
- 2013-2015, ¥ 500,000 Program for New Century Excellent Talents in University (NCET-12-0492).
- 2012.1 - 2013.12 ¥ 400,000 “Fundamental Research Funds for the Central Universities (2012QNA5012), China: Fault detection, diagnosis and prediction based on multimode and between-mode transition.
- 2012.10 - 2013.10 ¥ 10,000 Project of Education Department of Zhejiang Province (Y201223159), China: Phase based fault diagnosis and prognostic for batch processes.
- 2012.12-2015.12 ¥ 4000,000 The 1st Science and Technology Plan Project-Guangdong province academician workstation (2012B090500010): Batch Process Monitoring and Fault diagnosis.
- 2012.10 - 2013.10 ¥ 10,000 Project of Zhejiang Province for excellent overseas

scholars, China: Statistical modeling, process monitoring, fault detection and prognostic for multimode processes.

Participated

- 2012.1 - 2016.8 ¥ 7480,000 Project 973 (2012CB720500), China: Fundamental research of chemical process integration and optimization for highly efficient utilization of materials and energy.
- 2008.3 - 2010.3 ¥ 290,000 National Natural Science Foundation of China (No. 60774068): soft-phase partition based online monitoring, fault diagnosis and quality prediction for batch processes.
- 2007.1 - 2009.12 HK\$ 1100,000 The Hong Kong Research Grants Council (No. 613107): Development of an Injection Molding Sensor for through Cycle Monitoring and Control.

Other Academic Activities

1). Editorial board member

Journal of Control Science and Engineering (2014-)

2). Committee member

- 2015—Sub-committee on Robust and Intelligent Control (SCRIC), Technical Committee on Control Theory (TCCT), Chinese Association of Automation (CAA)
- 2014—Youth Automation Association Committee
- 2014—Chinese Process Control Professional Committee
- 2012—CCDC International Technical Program Committee
- 2012—CPCC International Technical Program Committee

3). Academic conferences and workshops

- 2012.8 23rd the Chinese Process Control Conference, energy conservation and emission reduction, monitoring and control for industrial processes, Session Chair
- 2012.7 10th World Congress on Intelligent Control and Automation, Biosystems Session

Chair

- 2012.5, 24th CDCC, Intelligent Automation Session Chair and Process Control Session Chair
- 2008.12, 10th International Conference on Control, Automation, Robotics and Vision, Vietnam, “Process Control” Session Chair

4). Academic journal and conference referee

American Institute of Chemical Engineers Journal, Chemical Engineering Science, Industrial & Engineering Chemistry Research, Journal of Process Control, Control Engineering Practice, IEEE Transactions on Control Systems Technology, IEEE Transactions on Automation Science and Engineering, Chemical Engineering & Technology, Chemometrics and Intelligent Laboratory Systems, World Congress of International Federation of Automation Control, Conference on Decision and Control, European Control Conference, America Control Conference, AIChE annual meeting.

Patents:

- [1]. **Chunhui Zhao**, Wenqing Li, A step-wise sequential phase partition algorithm, No. CN103116306A, 2013-05-22.
- [2]. **Chunhui Zhao**, Wenqing Li, Concurrent phase partition based statistical modeling and online monitoring for multimode batch processes, No. CN103336507A, 2013-10-02.
- [3]. **Chunhui Zhao**, Wenqing Li, A global glucose prediction method based on frequency band separation and empirical modeling, No. CN103310113A, 2013-09-18.
- [4]. **Chunhui Zhao**, Chengxia Yu, Wenqing Li, A global glucose prediction method based on empirical modeling and model migration, No. CN103605878A, 2014-02-26.
- [5]. **Chunhui Zhao**, A batch process monitoring method with limited batches. Application No. 201410032100.2, 2014-05-07.
- [6]. **Chunhui Zhao**, Yan Qin, A fault prognostic method based on combined relative analysis and autoregression model. Application No. 201510013810.5, 2015-01-10.
- [7]. **Chunhui Zhao**, Wenqing Li, A fault diagnosis method based on a nested-loop Fisher discriminant analysis algorithm. Application No. 201510028871.9, 2015-01-21.

Publications

1). Monograph:

Chunhui Zhao, Ningyun Lu, Statistical monitoring and quality analysis for batch processes.

2014, Science Press, Beijing.

2). Refereed International Journal Publications

- [1]. **Chunhui Zhao**, Fuli Wang, and Mingxing Jia. Dissimilarity analysis based batch process monitoring using moving windows. **AIChE Journal**, 2007, 53(5), 1267-1277.
- [2]. **Chunhui Zhao**, Fuli Wang, Zhizhong Mao, Ningyun Lu, and Mingxing Jia. Quality prediction based on phase-specific average trajectory for batch processes. **AIChE Journal**, 2008, 54(3), 693-705.
- [3]. **Chunhui Zhao**, Furong Gao, Yuan Yao, and Fuli Wang. A Robust Calibration Modeling Strategy for Analysis of Interference-subject Spectral Data. **AIChE Journal**, 2010, 56 (1), 196-206.
- [4]. **Chunhui Zhao**, Furong Gao, and Fuli Wang. An improved independent component regression modeling and quantitative calibration procedure. **AIChE Journal**, 2010, 56 (6), 1519-1535.
- [5]. **Chunhui Zhao**, Furong Gao, Dapeng Niu, and Fuli Wang. Enhanced Process Comprehension and Quality Analysis Based on Subspace Separation for Multiphase Batch Processes. **AIChE Journal**, 2011, 57 (2), 388-403.
- [6]. **Chunhui Zhao**, Furong Gao and Fuli Wang. Spectra Data Analysis and Calibration Modeling Method Using Spectra Subspace Separation and Multiblock Independent Component Regression Strategy. **AIChE Journal**, 2011, 57(5), 1202–1215.
- [7]. **Chunhui Zhao**, Furong Gao. A bidirectional Between-set Statistical Analysis Method and Its Applications. **AIChE Journal**, 2011, 57(5), 1233–1249.
- [8]. **Chunhui Zhao**, Furong Gao. Spectra Calibration Modeling and Statistical Analysis for Cumulative Quality Interpretation and Prediction. **AIChE Journal**, 2012, 58(2), 466–479.
- [9]. **Chunhui Zhao**, Furong Gao. Between-phase-based Statistical Analysis and Modeling for Transition Monitoring in Multiphase Batch Processes. **AIChE Journal**, 2012, 58(9), 2682-2696.
- [10]. **Chunhui Zhao***, Furong Gao, Youxian Sun. Between-phase calibration modeling and transition analysis for phase-based quality interpretation and prediction. **AIChE Journal**, 2013, 59(1), 108–119.
- [11]. **Chunhui Zhao***, Youxian Sun, Luping Zhao. Interindividual Glucose Dynamics in Different Frequency Bands for Online Prediction of Subcutaneous Glucose Concentration in Type 1 Diabetic Subjects. **AIChE J.** 2013, 59 (11), 4228-4240.
- [12]. **Chunhui Zhao***, Concurrent Phase Partition and Between-mode Statistical Analysis

- for Multimode and Multiphase Batch Process Monitoring. **AIChE J.** 2014, 60(2), 559-573.
- [13]. **Chunhui Zhao***, Eyal Dassau, Lois Jovanovič, Howard C. Zisser, Francis J. Doyle III, Dale E. Seborg*. Online Prediction of Subcutaneous Glucose Concentration for Type 1 Diabetes Using Empirical Models and Frequency-Band Separation. **AIChE Journal**. 2014, 60(2), 574-584.
- [14]. **Chunhui Zhao***, Quality-relevant Fault Diagnosis with Concurrent Phase Partition and Analysis of Relative Changes for Multiphase Batch Processes. **AIChE Journal**, 2014, 60(6), 2048–2062.
- [15]. **Chunhui Zhao**, Fuli Wang, Ningyun Lu, and Mingxing Jia. Stage-based soft-transition multiple PCA modeling and on-line monitoring strategy for batch processes. **Journal of Process Control**, 2007, 17(9), 728–741.
- [16]. **Chunhui Zhao**, Shengyong Mo, Furong Gao, Ningyun Lu, Yuan Yao. Statistical Analysis and Online Monitoring for Handling Multiphase Batch Processes with Varying Durations. **Journal of Process Control**, 2011, 21(6), 817-829.
- [17]. **Chunhui Zhao**, Fuli Wang, and Yingwei Zhang. Nonlinear process monitoring based on kernel dissimilarity analysis. **Control Engineering Practice**, 2009, 17(1), 221-230.
- [18]. **Chunhui Zhao**, Fuli Wang, Furong Gao, Ningyun Lu, and Mingxing Jia. Adaptive Monitoring Method for Batch Processes Based on Phase Dissimilarity Updating with Limited Modeling Data. **Industrial & Engineering Chemistry Research**, 2007, 46(14), 4943-4953.
- [19]. **Chunhui Zhao**, Fuli Wang, Zhizhong Mao, Ningyun Lu, and Mingxing Jia. Improved Knowledge Extraction and Phase-based Quality Prediction for Batch Processes. **Industrial & Engineering Chemistry Research**, 2008, 47(3), 825-834.
- [20]. **Chunhui Zhao**, Fuli Wang, Zhizhong Mao, Ningyun Lu, and Mingxing Jia. Improved Batch Process Monitoring and Quality Prediction Based on Multi-phase Statistical Analysis. **Industrial & Engineering Chemistry Research**, 2008, 47(3), 835-849.
- [21]. **Chunhui Zhao**, Fuli Wang, Zhizhong Mao, Ningyun Lu, and Mingxing Jia. Adaptive monitoring based on independent component analysis for multiphase batch processes with limited modeling data. **Industrial & Engineering Chemistry Research**, 2008, 47(9), 3104-3113.
- [22]. **Chunhui Zhao**, Fuli Wang, Furong Gao, and Yingwei Zhang. Enhanced Process

- Comprehension and Statistical Analysis for Slow-varying Batch Processes. **Industrial & Engineering Chemistry Research**, 2008, 47(24), 9996-10008.
- [23]. **Chunhui Zhao**, Furong Gao, and Fuli Wang. Nonlinear Batch Process Monitoring Using Phase-based Kernel Independent Component Analysis-Principal Component Analysis (KICA-PCA). **Industrial & Engineering Chemistry Research**, 2009, 48 (20), 9163–9174.
- [24]. Yuan Yao, **Chunhui Zhao**, and Furong Gao. Batch-to-Batch Steady State Identification Based on Variable Correlation and Mahalanobis Distance. **Industrial & Engineering Chemistry Research**, 2009, 48(24), 11060-11070.
- [25]. **Chunhui Zhao**, Furong Gao, and Fuli Wang. Phase-based Joint Modeling and Spectroscopy Analysis for Batch Processes Monitoring. **Industrial & Engineering Chemistry Research**, 2010, 49 (2), 669–681.
- [26]. **Chunhui Zhao**, Furong Gao. Multiblock-based Qualitative and Quantitative Spectral Calibration Analysis. **Industrial & Engineering Chemistry Research**, 2010, 49(18), 8694–8704.
- [27]. **Chunhui Zhao**, Furong Gao. Two-step Multiset Regression Analysis (MsRA) Algorithm. **Industrial & Engineering Chemistry Research**, 2012, 51(3), 1337–1354.
- [28]. **Chunhui Zhao***, Furong Gao, Youxian Sun. Statistical Modeling and Online Monitoring Based on Between-Set Regression Analysis. **Industrial & Engineering Chemistry Research**. 2012, 51(25), 8495–8509.
- [29]. **Chunhui Zhao***, Youxian Sun, Furong Gao. A Multiple-Time-Region (MTR)-Based Fault Subspace Decomposition and Reconstruction Modeling Strategy for Online Fault Diagnosis. **Industrial & Engineering Chemistry Research**, 2012, 51(34), 11207-11217.
- [30]. **Chunhui Zhao**, Fuli Wang, and Furong Gao. Covariance-oriented qualitative and quantitative analysis for multistage batch processes. **The Canadian Journal of Chemical Engineering**, 2009, 87(3), 466-476.
- [31]. **Chunhui Zhao**, Fuli Wang, and Furong Gao. Improved Calibration Investigation using Phase-wise Local and Cumulative Quality Interpretation and Prediction. **Chemometrics and Intelligent Laboratory Systems**, 2009, 95(2), 107-121.
- [32]. **Chunhui Zhao**, Furong Gao, Dapeng Niu, Fuli Wang. A Two-step Basis Vector Extraction Strategy for Multiset Variable Correlation Analysis. **Chemometrics and Intelligent Laboratory Systems**, 2011, 107(1), 147-154.
- [33]. **Chunhui Zhao**, Yuan Yao, Furong Gao, Fuli Wang. Statistical Analysis and Online

- Monitoring for Multimode Processes with Between-mode Transitions. **Chemical Engineering Science**, 2010, 65(22), 5961-5975.
- [34]. **Chunhui Zhao**, Furong Gao. Multiphase Calibration Modeling and Quality Interpretation by Priority Sorting. **Chemical Engineering Science**, 2011, 66(21), 5400-5409.
- [35]. **Chunhui Zhao**, Eyal Dassau, Lois Jovanovič, Howard C. Zisser, Francis J. Doyle III, Dale E. Seborg. Predicting Subcutaneous Glucose Concentration Using Latent Variable (LV)-based Statistical Analysis Method for Type 1 Diabetes Mellitus. **Journal of Diabetes Science and Technology**. 2012, 6(3), 617-633.
- [36]. Luping Zhao, **Chunhui Zhao***, Furong Gao. Phase Transition Analysis based Quality Prediction for Multi-phase Batch Processes. **Chinese Journal of Chemical Engineering**, 2012, 20 (6), 1191-1197.
- [37]. **Chunhui Zhao***, Furong Gao. Multiset Independent Component Regression (MsICR) Based Statistical Data Analysis and Calibration Modeling. **Industrial & Engineering Chemistry Research**. 2013, 52 (8), 2917–2924.
- [38]. Luping Zhao, **Chunhui Zhao***, Furong Gao*. Inner-phase analysis based statistical modeling and online monitoring for uneven multiphase batch processes. **Industrial & Engineering Chemistry Research**. 2013, 52 (12), 4586-4596.
- [39]. **Chunhui Zhao***, Youxian Sun. Step-wise sequential phase partition (SSPP) algorithm based statistical modeling and online process monitoring. **Chemometrics and Intelligent Laboratory Systems**. 2013,125,109–120.
- [40]. **Chunhui Zhao***, Youxian Sun. Subspace decomposition approach of fault deviations and its application to fault reconstruction. **Control Engineering Practice**. 2013, 21(10), 1396-1409.
- [41]. **Chunhui Zhao***, Furong Gao. Subspace Decomposition-based Reconstruction Modeling for Fault Diagnosis in Multiphase Batch Processes. **Industrial & Engineering Chemistry Research**. 2013, 52(41), 14613-14626.
- [42]. **Chunhui Zhao***, Youxian Sun. Comprehensive subspace decomposition and isolation of principal reconstruction directions for online fault diagnosis. **Journal of Process Control**. 2013, 23(10), 1515-1527.
- [43]. **Chunhui Zhao***, Furong Gao, Statistical Modeling and Online Fault Detection for Multiphase Batch Processes with Analysis of Between-phase Relative Changes, **Chemometrics and Intelligent Laboratory Systems**. 2014, 130, 58-67.
- [44]. **Chunhui Zhao***, Weidong Zhang, Reconstruction based Fault Diagnosis using

- Concurrent Phase Partition and Analysis of Relative Changes for Multiphase Batch Processes with Limited Fault Batches, **Chemometrics and Intelligent Laboratory Systems**, 2014, 130, 135-150.
- [45]. **Chunhui Zhao***, Youxian Sun. Multi-space Total Projection to Latent Structures and its Application to Online Process Monitoring. **IEEE Transactions on Control System Technology**. 2014, 22(3), 868-883.
- [46]. **Chunhui Zhao***. A Quality-relevant Sequential Phase Partition Approach for Regression Modeling and Quality Prediction Analysis in Manufacturing Processes. **IEEE Transactions on Automation Science and Engineering**. DOI: 10.1109/TASE.2013.2287347.
- [47]. **Chunhui Zhao***, Furong Gao. Fault-relevant Principal Component Analysis (FPCA) Method for Multivariate Statistical Modeling and Process Monitoring. **Chemometrics and Intelligent Laboratory Systems**, 2014, 133, 1-16.
- [48]. **Chunhui Zhao***, An iterative within-phase relative analysis algorithm for relative sub-phase modeling and process monitoring, **Chemometrics and Intelligent Laboratory Systems**, 2014, 134(15), 67–78.
- [49]. Luping Zhao, **Chunhui Zhao***, Furong Gao, Regression modeling and quality prediction for multiphase batch processes with inner-phase analysis, **Chemometrics and Intelligent Laboratory Systems**, 2014, 135, 1-16.
- [50]. **Chunhui Zhao***, Phase Analysis and Statistical Modeling with Limited Batches for Multimode and Multiphase Process Monitoring, **Journal of Process Control**, 2014, 24, 856–870
- [51]. Luping Zhao, **Chunhui Zhao***, Furong Gao, Inter-batch-evolution-traced process monitoring based on inter-batch mode division for multiphase batch processes, **Chemometrics and Intelligent Laboratory Systems**, 2014, 138, 178-192.
- [52]. Luping Zhao, **Chunhui Zhao***, Furong Gao, Between-Mode Quality Analysis Based Multimode Batch Process Quality Prediction, **Industrial & Engineering Chemistry Research**, 2014, 53(40), pp 15629–15638.
- [53]. Wei Zhang, Chunhui Zhao, Xing He, **Weidong Zhang***, An extended inner–outer factorisation algorithm based on the structure of a transfer function matrix inverse, **International Journal of Systems Science**, DOI: 10.1080/00207721.2014.942244.
- [54]. **Chunhui Zhao***, Chengxia Yu, Rapid Model Identification for Online Predicting Subcutaneous Glucose Concentration in New Subjects with Type I Diabetes, **IEEE Transactions on Biomedical Engineering**, 2015, 62(5), 1333-1344.

- [55]. **Chunhui Zhao***, Wei Wang, Yan Qin, Furong Gao, Comprehensive Subspace Decomposition with Analysis of Between-mode Relative Changes for Multimode Process Monitoring, *Industrial & Engineering Chemistry Research*, 2015, 54 (12), 3154–3166.
- [56]. **Chunhui Zhao***, Yongji Fu, Statistical Analysis based Online Sensor Failure Detection for Continuous Glucose Monitoring in Type I Diabetes, *Chemometrics and Intelligent Laboratory Systems*, 2015, 144(15), 128-137.
- [57]. **Chunhui Zhao***, Furong Gao, A Nested-loop Fisher Discriminant Analysis Algorithm, *Chemometrics and Intelligent Laboratory Systems*, 2015, 146(15), 396–406.

3). Refereed Chinese Journal Publications

- [1].**Chunhui Zhao***, Youxian Sun, Furong Gao. Multiple Local Reconstruction Model-Based Fault Diagnosis for Continuous Processes. *Acta Automatica Sinica*. (special issue), 2013,39(5): 487-493.
- [2].Luping Zhao, **Chunhui Zhao***, Furong Gao. Phase Transition Analysis based Quality Prediction for Multi-phase Batch Processes. *Chinese Journal of Chemical Engineering*. Accepted.
- [3].**Chunhui Zhao**, Fuli Wang, Yuan Yao, Furong Gao. Phase-based statistical modeling, online monitoring and quality prediction for batch processes (review paper). *Acta Automatica Sinica*. 2010, 36(3), 366-374.
- [4].**Chunhui Zhao**, Fuli Wang, Mingxing Jia. Statistical process monitoring based on data structure distribution in principal subspace. *Chinese Journal of Scientific Instrument*, 2008, 29(8), 1598-1604.
- [5].Mingxing Jia, **Chunhui Zhao**, Fuli Wang, Zhizhong, Mao, Li Hongru. Nonlinear principal component analysis based on RBF neural network and principal curve. *Chinese Journal of Scientific Instrument*. 2008, 29(3), 453-457.
- [6].Mingxing Jia, Dapeng Niu, Fuli Wang, **Chunhui Zhao**. New Nonlinear Principal Analysis Method Based on RBF Neural Network. *Journal of System Simulation*, 2007, 19(24), 5684-5687.
- [7].Mingxing Jia, Fuli Wang, Dapeng Niu, **Chunhui Zhao**. Robust fault diagnosis for a class of nonlinear systems with disturbance decoupling ability based on RBF neural network. *Journal of Harbin Institute of Technology (New Series)* 2007, 14(SUPPL. 2), 86-89.

4). Some of Referred Publications in Conference Proceedings

- [1]. **Chunhui Zhao***, Quality-relevant Iterative Relative Analysis based Sub-phase Modeling for Multiphase Batch Process Monitoring. The 11th World Congress on Intelligent Control and Automation (WCICA), June 29-July 4, 2014, Shenyang, China, accepted.
- [2]. **Chunhui Zhao***, Sensor abnormality detection based on global prediction model for type I diabetes. The 11th World Congress on Intelligent Control and Automation (WCICA), June 29-July 4, 2014, Shenyang, China, accepted.
- [3]. **Chunhui Zhao***, Relative Sub-PCA Modeling Algorithm using Iterative Within-phase Relative Analysis for Multiphase Batch Process Monitoring. ECC, June 24-27, 2014, Strasbourg, France, accepted.
- [4]. Chengxia Yu, **Chunhui Zhao***, Feasibility of global model for Online Prediction of Hypo/Hyperglycemia for Type 1 Diabetes. 74th scientific sessions of American Diabetes Association (ADA), June 13-17, 2014, San Francisco, CA, USA, accepted.
- [5]. Wenqing Li, **Chunhui Zhao***, Youxian Sun, A Step-wise sequential phase partition algorithm with limited batches for statistical modeling and online monitoring of multiphase batch processes. IFAC, August 24-29, 2014, Cape Town, South Africa, accepted.
- [6]. Chengxia Yu, **Chunhui Zhao***, Rapid Model Identification for Online Glucose Prediction of New Subjects With Type 1 Diabetes Using Model Migration Method. IFAC, August 24-29, 2014, Cape Town, South Africa, accepted.
- [7]. Luping Zhao, **Chunhui Zhao***, Furong Gao, Intra-Batch Evolution Based Process Monitoring for Multiphase Batch Processes. IFAC, August 24-29, 2014, Cape Town, South Africa, accepted.
- [8]. **Chunhui Zhao***, Fault subspace selection and analysis of relative changes based reconstruction modeling for multi-fault diagnosis. Proceedings of the 26th Chinese Control and Decision Conference, May 31-June 2, 2014, Changsha, China.
- [9]. Chengxia Yu, **Chunhui Zhao***, Reconstruction based Fault Diagnosis using Concurrent Phase Partition and Analysis of Relative Changes for Multiphase Batch Processes with Limited Fault Batches, ACC, June 4-6, 2014, Portland, OR, accepted.
- [10]. Chengxia Yu, **Chunhui Zhao***, Yongji Fu, Rapid Model Identification for Online Glucose Prediction of New Subjects with Type 1 Diabetes Using Model Migration Method, 2014 ATTD, February 5-8, Vienna, Austria, accepted.
- [11]. Luping Zhao, **Chunhui Zhao***, Furong Gao. Quality-related inner-phase evolution analysis and quality prediction for uneven batch processes. Proceedings of the 10th international Symposium on Dynamics and Control of Process Systems, Mumbai, India,

Dec. 18-20, 2013, pp 517-522.

- [12]. **Chunhui Zhao***. Principal Component of Fault Detection Based Reconstruction Modeling and Subspace Decomposition For Fault Diagnosis in Multiphase Batch Processes. Proceedings of the 9th World Congress of Chemical Engineering, Seoul, Korea, August 18-23, 2013.
- [13]. **Chunhui Zhao***. Multimode and Multiphase Batch Process Monitoring with Concurrent Phase Identification and Between-mode Statistical Analysis. Proceedings of the 9th World Congress of Chemical Engineering, Seoul, Korea, August 18-23, 2013.
- [14]. **Chunhui Zhao***, Youxian Sun and Furong Gao. Quality-relevant Fault Diagnosis with Concurrent Phase Partition and Analysis of Relative Changes for Multiphase Batch Processes, Proceedings of the 24th CPCC, Hohhot, China, August 2-5, 2013.
- [15]. **Chunhui Zhao***; Li Wenqing; Youxian Sun. A Sub-principal Component of Fault Detection (PCFD) Modeling Method and Its Application to Online Fault Diagnosis. Proceedings of the 9th Asian Control Conference, Istanbul, June 23-26, 2013.
- [16]. **Chunhui Zhao***, Wenqing Li, Luping Zhao. Online Prediction of Abnormal Glycemia Events for Type 1 Diabetes Using Empirical Models and Confidence Limits. Proceedings of the American Diabetes Association 73rd Scientific Sessions, June 21-25, 2013, McCormick Place Convention Center (West Building), Chicago, IL, USA, June 21-25, 2013, Diabetes. 2013; 62 (suppl 1)
- [17]. **Chunhui Zhao***, Youxian Sun, Furong Gao. The Multi-space Generalization of Total Projection to Latent Structures (MsT-PLS) and Its Application to Online Process Monitoring. Proceedings of the 10th IEEE International Conferences on Control & Automation, pp 1441-1446, June 12-14, 2013, Hangzhou, China.
- [18]. Zhao Luping, **Chunhui Zhao***, and Gao Furong. Inner-phase-evolution-traced statistical modeling and online monitoring for uneven batch processes. Proceedings of the 10th IEEE International Conferences on Control & Automation, pp 294-299, June 12-14, 2013, Hangzhou, China.
- [19]. **Chunhui Zhao***, Wenqing Li, Youxian Sun. Subspace decomposition approach of fault deviations and its application to fault reconstruction. Proceedings of the 32nd Chinese Control Conference, pp 6122-6127, July 26-28, 2013, Xi'an, China.
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