

Simira Papadopoulou
Professor of Process Control
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Education

1982-1988: PhD (Dr. Ing), Institute for Systems Dynamics and Control, University of Stuttgart, Germany, by Prof. em. Dr. Ing Dr. h. c. mult. E.D.Gilles

10/1977-7/82: Diploma in Chemical Engineering, Department of Chemical Engineering, ATh

Scholarships / awards

1983-1988: Scholarship for Ph.D. Studies, Deutscher Akademischer Austausch Dienst (DAAD), (Council of Europe Higher Education), Inst. Systemdynamik und Regelungstechnik, Uni. Stuttgart

1977: Award/Scholarship for Excellent Performance, State Scholarships Foundation of Greece (IKY).

1977: Anatolia College Award for Excellent Performance (ranking 3rd).

Career - Academic Positions

1997-present: Professor of Process Control, Department of Automation Engineering, ATEI

Thessaloniki, Head of Process Control / SCADA (<http://www.autom.teithe.gr/prosopiko.php>).

Collaborating Faculty Member, Laboratory of Process Systems Design and Implementation, CPERI, CERTH (<http://psdi.cperi.certh.gr/people>).

2015-2017: Head of Department of Automation Engineering, ATEI Thessaloniki.

1994-1997: Assistant Professor of Process Control, Department of Automation Engineering, ATEI Th.

1992-1994: Part time Professor of Process Control, Department of Automation, ATEI Th.

1989-1994: Chemical Engineer in EKO Refinery, Design and Systems Analysis, Equipment and Materials.

1988-1990: Lecturer of Systems Dynamics and Control, Dep. of Chemical Engineering, ATh.

1988-1989: Research Associate, Chemical Process Engineering Research Institute, Thessaloniki.

1982-1988: Research and teaching assistant, Inst. for Systems Dynamics and Control, Uni. Stuttgart, Prof. E. D. Gilles.

Research Interests

Advanced Automatic Control Systems

Develop methods and techniques of automatic control systems in processes. Use process models to design optimal control systems. Develop integrated control systems for autonomous systems producing energy and chemicals.

Modeling and Optimization of Complex Process Systems

Modeling of complex process systems for process behavior prediction. Application of advanced optimization techniques to meet specific applications needs in energy processes.

Energy management strategies – Energy production from RES

Design integrated systems using renewable energy sources (solar, wind) to meet the desired electrical load. Excess energy is stored in batteries stacks or in the form of hydrogen. The energy deficit is covered by the stored hydrogen in fuel cell. Implementation of Energy management strategies.

Research Projects (2013-18)

2018-present: Socratces: “SOlar Calcium-looping integration for Thermo-Chemical Energy Storage”, H2020_LCE_2016-2017

2017-present: inteGRIDy: “Integrated Smart grid Cross-Functional Solutions for Optimized Synergetic Energy Distribution, Utilization and Storage Technologies”, H2020_LCE_2016-2017

2012-2015: Technical and Administrative Project Manager/coordinator of ARCIMEDES III
Project: “Design Optimization & Control of an Integrated Fuel Cell System with Application on Vehicular Power Systems” (*OPT-VIPS*).

2012-2014: H2S-PROTON: “Hydrogen production from H2S decomposition in micro-structured proton-conducting solid oxide membrane reactors”, BS-ERA.NET Pilot Joint Call 2010/2011.

2011-2014: CoMETHy: Compact Multifuel-Energy To Hydrogen converter” Grant Agreement N° 279075, Collaborative Project, 7th Framework Programme, FCH JU.

2011-2013: SUPERMICRO :“Optimal Energy Management of Hybrid Autonomous Systems”, Synergasia, funded by Greek Ministry of Education (General Secretariat for Research and Technology) and EU-NSRF.

2011-2013: POWERMOTION : “Design and Development of a Hybrid Power Supply System for Vehicles”, Synergasia, funded by Greek Ministry of Education (General Secretariat for Research and Technology) and EUNSRF.

Scientific Activities

- Collaborating Faculty Member of Laboratory of Process Systems Design and Implementation, CPERI, CERTH.
- Member of the research committee of ATEITH (2012-2014)
- Head of the electronic division of Automation Department, ATEITH (2002-2003)
- Head of the committee for the students' practical training of Automation Engineering Department (2013-2015)
- Member of Electoral Bodies and advisory committees for the election of Faculty Members
- Member of seven-member committee for two PhD thesis examinations: Chemical Engineering Department, AUTH and University of Western Macedonia.
- Co-supervisor of two PhD students: Department of Mechanical Eng. AUTH and University of Western Macedonia
- Reviewer in scientific journals and conferences

Books- Chapters in refereed edited volumes-Monographs

- Daoutidis Pr., Mastrogeorgopoulos Sp. **Papadopoulou S. Process Control**, 2012, Tziolas Pub., ISBN: 978-960-418-390-6
- Voutetakis S., Seferlis P., Stergiopoulos F., **Papadopoulou S.**, Papadopoulos A., Ipsakis D., Ziogou C., Elmasides C., ***Design, Optimization and Control of Power Systems based on Renewable Energy Sources and Hydrogen Production Storage and Utilization***, 2011, Nova Science Publishers, NY, ISBN 978-1-61122-979-0.
- **Papadopoulou Simira, *Schaetzung der Kettenlaengenverteilung in Polymerisationsreaktoren***, Fortschritt-Berichte VDI, VDI Verlag, Reihe 8 Mess-Steuerungs- und Regelungstechnik, **1988**, Duesseldorf, Nr. 158, ISSN 0178-9546, ISBN 3-18-145808-2.
- Chrysovalantou Ziogou, **Simira Papadopoulou**, Efstratios Pistikopoulos, Michael Georgiadis, Spyros Voutetakis, **Model-Based Predictive Control of Integrated Fuel Cell Systems-From Design to Implementation**, pp 387-430 in Advances in Energy Systems Engineering, **2016**.
- Voutetakis S., Stergiopoulos F., Seferlis P., **Papadopoulou S.**, Ipsakis D., Papadopoulos A., Ziogou C., Elmasides C., ***Design of a Stand-Alone Power System using Renewable Energy Sources and Long-Term Hydrogen Storage***, in **Handbook of Sustainable Energy**, Editors: W. H. Lee and V. G. Cho, Nova Science Pub Inc, p. 1-88, ISBN: 978-1-60876-263-7, **2010**.
- **Papadopoulou S.**, Gilles E.D., ***Continuous Estimation of the Chain Length Distribution in a Polymerization Reactor Considering Time Discrete GPC Measurements***, in **Polymer Reaction Engineering**, **1986**, Editors K.H. Reichert, W. Geiseler, Huethig & Wepf Verlag, N.York., p.243, ISBN 385739-117-0.

Research articles in scientific journals and refereed international

Conference proceedings: 100

Citations: Scopus: **546** (h-index 12), google scholar: **716** (h-index 14)

Indicative Publications

- Ziogou, C., Voutetakis, S., Georgiadis, M.C., **Papadopoulou, S., Model predictive control (MPC) strategies for PEM fuel cell systems – A comparative experimental demonstration**, Chemical Engineering Research and Design, Article in press, 2018
- Gkizas, G., Yfoulis, C., Amanatidis, C., Stergiopoulos, F., Giaouris, D., Ziogou, C., Voutetakis, S., **Papadopoulou, S., Digital state-feedback control of an interleaved DC–DC boost converter with bifurcation analysis**, Control Engineering Practice, 73, pp. 100-111, **2018**.
- Ipsakis, D., Ouzounidou, M., **Papadopoulou, S.**, Seferlis, P., Voutetakis, S., **Dynamic modeling and control analysis of a methanol autothermal reforming and PEM fuel cell power system**, Applied Energy, 208, pp. 703-718, 2017
- Kyriakides, A.-S., Seferlis, P., Voutetakis, S., **Papadopoulou, S., Investigating the simultaneous process design and control of a membrane reactor for hydrogen production via methane steam reforming**, Chemical Engineering Transactions 61, pp. 1375-1380, 2017
- Ziogou, C., Giaouris, D., Yfoulis, C., Stergiopoulos, F., Voutetakis, S., **Papadopoulou, S., Behaviour Assessment of a Fuel Cell -Battery System Using a Supervisory Control Methodology**

Empowered by a Hybrid Timed Automaton (HTA), Computer Aided Chemical Engineering , 37, 2015, pp. 2327-2332

- Gkizas, G., Amanatidis, C., Yfoulis, C., (...), Voutetakis, S., **Papadopoulou, S., State-feedback control of an interleaved DC-DC boost converter**, 24th Med. Conf. on Control and Automation, MED 2016, 7535901, pp. 931-936

-Yfoulis, C., Giaouris, D., Stergiopoulos, F., Ziogou, C., Voutetakis, S., **Papadopoulou, S., Robust constrained stabilization of boost DC-DC converters through bifurcation analysis**, Control Engineering Practice 35, 2015, pp. 67-82

-Ziogou, C., **Papadopoulou, S., Voutetakis, S., Georgiadis, M.C., Online implementation of an integrated explicit and nonlinear Model Predictive Control (exNMPC) framework for a PEM fuel cell system**, IFAC Proceedings Volumes (IFAC-PapersOnline) , 2013, pp. 749-754

-Ziogou, C., **Papadopoulou, S., Georgiadis, M.C., Voutetakis, S., On-line nonlinear model predictive control of a PEM fuel cell system**, Journal of Process Control 23 (4), 2013, pp. 483-492

-Ipsakis, D., **Papadopoulou, S., Voutetakis, S., Seferlis, P., Analysis and implementation of a plant-wide control system for an LPG reforming-fuel cell power system**, Chemical Engineering Transactions 35, 2013, pp. 955-960