

Dr. Stamatina N. Vouyiouka

Associate Professor, School of Chemical Engineering
National Technical University of Athens

Personal Information

Date of Birth: 23 April 1977

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Synopsis

Prof. Stamatina Vouyiouka is an elected Associate Professor in the School of Chemical Engineering, NTUA (December 2019 – today). Her research interests are in the area of environmentally-friendly polymerization processes, such as solid state polymerization (SSP) and enzymatic polymerization, with special emphasis on polyamides and polyesters including biobased/biodegradable polymers. Her activity on polymerization processes also covers encapsulation methods and upgrading polymeric micro/nanoparticles, such as microcapsule-based systems for controlled release and self-healing materials. In parallel, her research focuses on the development of polymer recycling technologies towards value-added products, along with properties study and upcycling of biobased polymers. The last 10 years, her research strategy is based on the multipurpose character of SSP, which renders it, apart from being a finishing step in typical polymerization layouts, a valuable modification tool in many modern application fields, such as in the biobased polymers production and recycling industry.

Metrics (April 2021)

Publications 41 in 15 Journals [Average Impact Factor (IF) 4.306, Total Impact* 163.615]

Scopus *h*-index: 15, citations 758

h-index: 12, citations 544 (excluding self-citations)

Google Scholar *h*-index: 17, citations 892

i-10 index: 24

* Sum of (*Journal Impact Factor* × *Number of Publications in the Journal*) for all Journals

Education

06.2000 – 11.2004 **PhD in Polymer Science and Technology**, School of Chemical Engineering, National Technical University of Athens (NTUA), Athens, Greece. Thesis title: “Optimization of polyamide properties through solid state polymerization technology”

10.1995 – 10.2000 **Diploma in Chemical Engineering**, School of Chemical Engineering, National Technical University of Athens (NTUA), Athens, Greece. Diploma degree: 8.08/10

Publications

Edited Book (Invited)

Papaspyrides C, Vouyiouka S, Editors. Solid state polymerization. John Wiley & Sons, Inc. 2009 294 pp

Chapters in Books and Edited Volumes (Invited)

1. Vouyiouka S, Papaspyrides C. Mechanistic aspects of solid state polycondensation. In: Matyjaszewski K, Moeller M, editors. Comprehensive Polymer Science: Vol.4. Elsevier. 2012 pp.857-874
2. Boussia A, Vouyiouka S, Papaspyrides C. Polyamide nanocomposites by in-situ polymerization. Chapter 2. In: V. Mittal, editor. In-situ synthesis of polymer nanocomposites. Weinheim: Wiley VCH Verlag GmbH & Co. KGaA. 2012 pp.27-51
3. Vouyiouka S, Papaspyrides C. Solid state polymerization. In: Encyclopedia of Polymer Science and Technology. 4th edition. John Wiley & Sons, Inc. 2011 pp.1-32
4. Papaspyrides C, Vouyiouka S. Fundamentals of solid state polymerization. In: Papaspyrides C, Vouyiouka S, editors. Solid state polymerization. Chapter 1. John Wiley & Sons, Inc. 2009 pp.1-37
5. Vouyiouka S, Papaspyrides C. *Kinetic aspects of polyamides solid state polymerization*. In: Papaspyrides C, Vouyiouka S, editors. Solid state polymerization. Chapter 4. John Wiley & Sons, Inc. 2009 pp. 123-157

Selected publications in polymerization/modification processes and/or biobased/biodegradable polymers (*Corresponding author)

1. Gountela Chr, Rigopoulou M, Barampouti E-M, Vouyiouka* S. *Enzymatic prepolymerization combined with bulk post-polymerization towards the production of biobased polyesters: the case of poly(butylene succinate)*. Europ Polym J. 2021; 143: 110197, [doi](#).
2. Panagiotopoulos Chr, Porfyrus A, Korres D, Vouyiouka* S. *Solid-state polymerization as a vitrimerization tool starting from available thermoplastics: The effect of reaction temperatures*. Materials 2021;14(1), 9: 1-18, [doi](#).
3. Luyt* A, Gasmi S, Malik S, Aljindi R, Ouederni M, Vouyiouka S, Porfyrus A, Pfaendner R, Papaspyrides C. *Artificial ageing and stabilization of low-density polyethylene (LDPE) produced via autoclave and tubular process technologies*. eXPRESS Polymer Letters 2021;15(2):121-136, [doi](#).
4. Chronaki K, Korres MD, Papaspyrides C, Vouyiouka* S, *Poly(lactic acid) microcapsules: Tailoring properties via solid state polymerization*, Polym Degrad Stab. 2020;179:109283, [doi](#).
5. Tzavidi S, Zotiadis Chr, Porfyrus A, Korres DM, Vouyiouka* S, *Epoxy loaded poly(urea-formaldehyde) microcapsules via in situ polymerization designated for self-healing coatings*, J Appl Polym Sci, e49323, 2020, [doi](#).
6. Porfyrus A, Vasilakos S, Zotiadis Chr, Papaspyrides C, Moser K, Van der Schueren L, Buyle G, Pavlidou S, Vouyiouka* S, *Accelerated ageing and hydrolytic stabilization of poly(lactic acid) (PLA) under humidity and temperature conditioning*, Polymer Testing, 68, 315-332, 2018, [doi](#).
7. Douka A, Vouyiouka* S, Papaspyridi L-M, Papaspyrides CD, *A review on enzymatic polymerization to produce polycondensation polymers: The case of aliphatic polyesters, polyamides and polyesteramides*, Prog Polym Sci, 79, 1-25, 2017, [doi](#).
8. Kamtsikakis A, Kavetsou E, Chronaki K, Kiosidou E, Pavlatou E, Karana A, Papaspyrides C, Detsi A, Karantonis A, Vouyiouka* S, *Encapsulation of antifouling organic biocides in poly(lactic acid) nanoparticles*, Bioengineering (MDPI), 4(4), 81, 2017, [doi](#)
9. Georgousopoulou I-N, Vouyiouka* S, Dole P, Papaspyrides C, *Thermo-mechanical degradation and stabilization of poly(butylene succinate)*, Polym Degrad Stab, 128, 182-192, 2016, [doi](#)
10. Kanelli M, Douka A, Vouyiouka S, Papaspyrides* C, Topakas E, L.-M. Papaspyridi L.-M, Christakopoulos P, *Production of biodegradable polyesters via enzymatic polymerization and solid state finishing*, J Appl Polym Sci, 131(19),2014, [doi](#)
11. Vouyiouka* S, Theodoulou P, Symeonidou Ant, Papaspyrides C, Pfaendner R, *Solid state polymerization of poly (lactic acid): Some fundamental parameters*, Polym Degrad Stab, 98 (12), 2473-2481, 2013, [doi](#)

International Patents

1. Method for manufacturing aliphatic polyesters and use of phosphorus-containing organic additives, Pfaendner R, Papaspyrides C, Diamanti P-C, Vougiouka S, Chronaki K, Porfyrus A, **Fraunhofer-Gesellschaft**, WO2018224672, 2018, pp 24.
2. Process for the preparation of polyamides in the presence of a phosphonate, Pfaendner R, Fink J, Simon D, Papaspyrides C, Vougiouka S, **Ciba Specialty Chemicals Lampertheim GmbH**, WO2007/006647, 2007, pp.36.

Fellowships and Awards

- 2020 – 2021** Guest editor, **Materials** - [Special Issue](#) “Advances in Polycondensate Polymerization Techniques”, MDPI
- 2007** **Third Place Award** for Best Oral Presentation in ICSAM-2007, The International Conference of Structural Analysis of Advanced Materials (Patras, 2-6 Sept 2007)
- 2005** **Post-Doctoral Research Scholarship**, Hellenic Scholarship Foundation
- 2003, 2004, 2005** **Award D. Thomaidi**, Contribution to Science and Art Progress

Funded projects in polymerization/modification processes and/or biobased/biodegradable polymers

1. **Succivitr**: Comprehending and controlling the dynamics of the adaptable network in biobased vitrimers, **PEVE 2020 – NTUA**, 2020-2023, Role: Scientific Supervisor and Program Coordinator.
2. **FUVPP**: Flame-retarded and UV-Protected Polypropylene HFLS Pipes, **EPAnEK 2014-2020**, 2020-2023, Role: Scientific Supervisor and Program Coordinator.
3. **HYSELFDRUPS**: Hybrid thermal spray coatings with self-lubricant properties for wear protection of Internal Combustion Engine piston rings, **EPAnEK 2014-2020**, 2020-2023, Role: Scientific Supervisor.
4. **BIOICEP**: Bio innovation of a circular economy for plastics, **Horizon 2020**, 2020-2024, Role: Research Associate.
5. **Encapsulation** of active agents in polymeric microcapsules: Tailoring properties via solid state polymerization, **ESPA 2014-2020**, 2020-2021, Role: Research Associate.
6. **Sustainable packaging** for the beverage industry, **Coca-Cola Hellenic Bottling Company**, 2018-2019, Role: Principal Investigator.
7. **BIO4SELF**: Biobased self-functionalised self-reinforced composite materials based on high performance nanofibrillar PLA fibres, **Horizon 2020**, 2016-2019, Role: Research Associate.
8. **SUCCIPACK**: Development of active, intelligent, and sustainable food packaging using polybutylene succinate, **FP7**, 2012-2015, Role: Principal Investigator.
9. **TEXT-ENZ**: Upgrading of textile products using enzymes, **Synergasia 2009**, 2011-2014, Role: Principal Investigator.

Major Contribution to the Early Careers of Excellent Researchers

- 2015** **Best Diploma Thesis Award, Sector IV, School of Chemical Engineering, NTUA**
Kamtsikakis A, *Encapsulation of Antifouling agents in PLA microcapsules* (Supervisor: S. Vouyiouka)
- 2012** **Best Diploma Thesis Award at NTUA**
Kanelli M, *Enzymatic synthesis of polyesters* (Supervisor: S. Vouyiouka)

2009 - today Supervision/Cosupervision of **7 Doctoral Dissertations, 9 MSc Theses, 45 Undergraduate Diploma Theses** including 2 Erasmus Projects (School of Chemical Engineering, NTUA)
PhD theses in progress: **1.** Panagiotopoulos Christos. *Design and production of advanced polymeric materials via solid state polymerization*. November 2020 – today (Advisor). **2.** Gkountela Christina. *Development of environmentally friendly polymerization processes*. April 2019-today (Advisor). **3.** Zotiadis Christos. *Design of microcapsule-based polymeric encapsulation systems via in situ polymerization*. November 2018-today (Advisor). **4.** Chronaki Konstantina. *Solid state polymerization as a post-treatment tool for polymers upgrade*. March 2017-today (Advisor). **5.** Mytara Angeliki. *Optimization of solid state polymerization processes in polycondensates*. May 2017-today (Coadvisor, Advisor: C. Papaspyrides).