HELLENIC REPUBLIC
National and Kapodistrian University of Athens
EST. 1837

DEPARTMENT OF CHEMISTRY
INDUSTRIAL CHEMISTRY LABORATORY

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EDUCATION:

1987	Diploma in Chemistry, Aachen University of Technology (RWTH Aachen University), Germany
1990	Ph.D., RWTH Aachen University, Institute of Industrial Chemistry and Petrolchemistry under the supervision of Prof. Bernhard Fell in cooperation and exclusively financed by the Hoechst AG Werk Ruhrchemie Company (today Clariant AG) for the development of a novel industrial catalytic process for the hydroformylation of higher olefins employing water-soluble surface-active transition metal catalytic complexes in environmentally friendly, green and sustainable micellar aqueous/organic two-phase systems
5/1992 - 7/1993	Post-doctoral Researcher with Prof. Bernhard Fell at Institute of Industrial Chemistry and Petrolchemistry, RWTH Aachen University
8/1993 - 6/1997	Post-doctoral Researcher with Prof. Roger A. Sheldon, Delft University of Technology, Laboratory of Organic Chemistry and Catalysis, The Netherlands, in the field of catalytic and sustainable conversions of renewable biomass and its downstream products/platform chemicals employing water-soluble transition metal catalytic complexes in environmentally friendly, green and sustainable aqueous media

PROFESSIONAL EMPLOYMENT:

4/1987 - 10/1990 & 5/1992 - 7/1993	Scientific Assistant, RWTH Aachen, Institute of Industrial Chemistry and Petrolchemistry
8/1994 - 6/1997	Researcher, Delft University of Technology, Laboratory of Organic Chemistry and Catalysis
7/1997 - 10/2000	Assistant Professor, National and Kapodistrian University of Athens, Department of Chemistry, Laboratory of Industrial Chemistry, Greece
10/2000 - 2/2010	Tenured Assistant Professor, National and Kapodistrian University of Athens, Department of Chemistry, Laboratory of Industrial Chemistry, Greece
2/2010 - 2/2019	Associate Professor, National and Kapodistrian University of Athens, Department of Chemistry, Laboratory of Industrial Chemistry, Greece
2/2019 - present	Professor, National and Kapodistrian University of Athens, Department of Chemistry, Laboratory of Industrial Chemistry, Greece

HONOURS & AWARDS:

1979 - 1984	Scholarship of the Dr. Jost Henkel Stiftung, Henkel KGaA Company, Germany, due to excellent results in the undergraduate studies
1985 - 1986	Scholarship of the DAAD (Deutscher Akademischer Austausch Dienst)

8/1993 - 7/1994	Fellowship of the Dutch National Innovation Oriented Programme on Catalysis (IOP-k) for the catalytic conversion of carbohydrates in aqueous media
1996	Award of Cambridge Isotope Laboratories (CIL), Massachusetts, USA, 5l of labelled ^{13}CO (99%) in the 2nd Worldwide CIL Research Grand Programme
7/1998 - 8/1998	Fellowship of the Delft University of Technology for research activities at Laboratory of Organic Chemistry and Catalysis in Delft, NL
7/1999 - 8/1999	Fellowship of the Royal Society of Chemistry, U.K., for research activities at Laboratory of Organic Chemistry and Catalysis in Delft, NL
7/2000 - 8/2000	Fellowship of the Delft University of Technology for research activities at Laboratory of Organic Chemistry and Catalysis in Delft, NL

RESEARCH INTERESTS / ACTIVITIES:

- Catalysis in homogeneous, aqueous/organic two-phase and aqueous monophasic systems in a broad spectrum of catalytic, industrially relevant reactions especially in catalytic and sustainable conversions of renewable biomass and its downstream products such as carbohydrates and vegetable/tropical oils as well as various renewable and sustainable platform chemicals
- Green/Sustainable Chemistry
- Micellar catalysis
- Design and synthesis of novel highly active and selective organic- and water-soluble transition- and main-group metal catalytic complexes and water-dispersible metal(0) catalytic nanoparticles
- Mechanistic investigations of catalytic reactions
- Development of novel catalytic industrially relevant processes
- Catalysis for biorefineries to produce advanced biofuels, biobased value-added chemicals, energy/power, food, pharmaceuticals and materials

TEACHING ACTIVITIES

Undergraduate courses:

- Industrial Chemical Processes
- Petroleum and Petrochemical Chemistry and Technology

Postgraduate courses:

- Catalysis - Green Chemistry: Fundamental Principles and Industrial Applications
- Green Chemistry: Catalysis in Aqueous Media
- Green Chemistry: Applied Catalysis in Biorefineries

EDITORIAL POSITIONS

- "*Frontiers in Chemistry*" Section "*Green and Sustainable Chemistry*" Associate Editor (April 2022-)
- "*Catalysts*" Section "*Biomass Catalysis*" Member of the Topical Advisory Panel (August 2022-)
- "*Catalysis Research*" Member of the Editorial Board (September 2021-)

DIRECTOR OF THE POSTGRADUATE STUDIES PROGRAMME "*CATALYSIS - GREEN CHEMISTRY AND THEIR INDUSTRIAL APPLICATIONS*"

Catalysis - Green Chemistry is an interdisciplinary field which combines high quality exciting science and engineering with a unique potential to contribute to environmentally and economically sustainable technologies which is reflected in the Postgraduate Study Programme (PSP) "*Catalysis - Green Chemistry and their Industrial Applications*" and allows students to focus on the three delineated areas of Green - Sustainable Applied Catalysis i.e. Homogeneous Catalysis, Heterogeneous Catalysis and Biocatalysis in their basics in the first semester, in one area in the second semester and for a further semester to accomplish Green - Sustainable Applied Catalysis research.

Previous structure of the PSP: This Postgraduate Study Programme (PSP) was established in September 2004 and its first title was "*Catalysis an Integrated Approach*" (Government Gazette Issue 1797/6-12-2004 t.B΄). Source of funding: EPEAEK II Programme of Greek Ministry of Education and the European Union (75/25). The PSP "*Catalysis an Integrated Approach*" was organized from the academic year 2004 - 2005 up to 2009 - 2010 in the Department of Chemistry of National and Kapodistrian University of Athens in collaboration with the academic staff of the Centre for Research & Technology Hellas (CERTH) in Thessaloniki and the Kavala Institute of Technology, Department of Petroleum and Natural Gas and in cooperation with Faculty Members of the Departments of Chemical Engineering of both the University of

Patras and the Aristotle University of Thessaloniki, the School of Chemical Engineering of the National Technical University of Athens, the Department of Chemistry of Aristotle University of Thessaloniki, the School of Mechanical Engineering of the Aristotle University of Thessaloniki and the Department of Chemistry of the University of Ioannina. The academic year 2010 - 2011 the PSP "*Catalysis an Integrated Approach*" was modified and possessed a teaching staff from Professors from the Department of Chemistry of National and Kapodistrian University of Athens and the School of Chemical Engineering of the National Technical University of Athens and the duration to obtain the degree of MSc in Catalysis was shortened for one semester to have a total studies duration of three semesters. Since the academic year 2016 - 2017 the PSP has been financed mainly by registration fees of the postgraduate students. The academic year 2017 - 2018 the PSP was revised, enlarged and updated with new knowledge and renamed from "*Catalysis an Integrated Approach*" into "*Catalysis and its Applications in the Industry*" with addition of a new course in the emerging field "*Applied Catalysis in Biorefineries*".

Present PSP structure: The Postgraduate Study Programme (PSP) "*Catalysis and its Applications in the Industry*" was re-established in the academic year 2018 - 2019 according to the law 4485/2017 for Postgraduate Study Programmes in Greece by Greek Ministry of Education (Government Gazette Issue 2762/11-7-2018 t.B΄). The PSP "*Catalysis and its Applications in Ind*ustry" was certified in January 2024 by the Evaluation and Certification Council of the Hellenic Authority for Higher Education (HAHE) as fully compliant with the Principles of the Quality Standard for the Certification of Postgraduate Study Programmes of the HAHE and the Principles and Guidelines for Quality Assurance in the European Higher Education Area (ESG), for study level 7 of the National and European Qualifications Framework (PMS Certification Decision of HAHE). The PSP was modified, enlarged and renamed from "*Catalysis and its Applications in Industry*" into "*Catalysis - Green Chemistry and their Industrial Applications*" in April 2024 (Government Gazette Issue 2433/24-4-2024 t.B') in accordance with the recommendations of the External Evaluation & Accreditation Panel appointed by the HAHE (Accreditation Report of the External Evaluation & Accreditation Panel of HAHE). The teaching staff of PSP "*Catalysis - Green Chemistry and their Industrial Applications*" consists of members only of the Department of Chemistry of National and Kapodistrian University of Athens (2 Faculty Members from the Industrial Chemistry Laboratory, 4 Faculty Members, 1 Emeritus Professor and 1 retired Faculty Member from the Laboratory of Inorganic Chemistry, 3 Faculty Members and 1 retired Faculty Member from the Laboratory of Organic Chemistry and 1 Faculty Member from the Laboratory of Physical Chemistry). The degree of Master of Science (MSc) in "*Catalysis - Green Chemistry and their Industrial Applications*" is awarded after the attendance and successful examination of three (3) compulsory courses and three (3) optional courses and Green - Sustainable Applied Catalysis research carried out during the one and half year duration of the PSP especially in the third semester.

OTHER ACTIVITIES:

- Executive Guest Editor for the Special Issue on "*Advances in Catalysis in Aqueous Media*" of *Catalysis Today*, Volume 447 (2025) 115163 edited by Georgios Papadogianakis, Roger A. Sheldon, Bruce H. Lipshutz and Paul J. Dyson with 18 published articles.
- Guest Editor for the Special Issue on "*Aqueous-Phase Catalytic Hydrogenation and Hydrogenolysis of Renewable Biomass and its Downstream Products*" of "*Catalysts*" Section "*Biomass Catalysis*", Volumes 12 (2022) & 13 (2023) edited by Georgios Papadogianakis, Roger A. Sheldon, Dmitry Yu. Murzin, Yulong Wu and Reinout Meijboom with 4 published articles.
- Guest Editor for the Research Topic "*Aqueous-phase Catalytic Conversions of Renewable Feedstocks for Sustainable Biorefineries*" of *Frontiers in Chemistry*, Section "*Green and Sustainable Chemistry*" E-Book (ISBN 978-2-88966-447-4) (2020) Pages 1-210 edited by Georgios Papadogianakis, Roger A. Sheldon, Yulong Wu and Dmitry Yu. Murzin with 15 published articles.
- Managing Guest Editor for the Special Issue on "*Recent Advances in Catalysis in Green Aqueous Media*" of *Catalysis Today*, Volume 247 (2015) Pages 1-190 edited by Georgios Papadogianakis and Roger A. Sheldon with 22 published articles.
- Scientist in Charge in 14 Research Projects
- 33 talks in International and National Conferences, Universities, Research Institutes and in Workshops
- Supervisor for 41 Diploma Theses, 26 Masters of Science (MSc) Theses and 1 Ph.D. Thesis

MAJOR ACCOMPLISHMENTS

Research expeditions as leader:

- Research project exclusively financed by the industrial company Cognis GmbH (today BASF) entitled "*Hydrogenation of methyl ester to fatty alcohol by homogenous catalysis using two-phase technique*" on

the biphasic hydrogenolysis of renewable palm kernel and coconut oil methyl esters into their corresponding fatty alcohols and applied a few thousands water-soluble catalytic systems

- Development of new processes for the aqueous-phase hydrogenation of the key biorefinery platform chemicals levulinic acid and furfural employing highly active, selective and stable water-soluble transition catalytic complexes modified with a broad spectrum of phosphines and nitrogen-containing ligands as well as stable and unprecedented highly active water-dispersible catalytic nanoparticles (NPs) of transition metals stabilized by a broad spectrum of water-soluble polymers with both oxygen-containing functionalities and with polymers bearing nitrogen-groups
- Development of a novel biphasic process for the partial hydrogenation of edible oils with a low *trans*-fats content using as model compounds polyunsaturated fatty acid methyl esters (FAME) of linseed oil and applying water-soluble Pt/TPPTS catalytic complexes [TPPTS= $P(C_6H_4$-*m*-$SO_3Na)_3$] in aqueous/organic two-phase systems.
- Development of a novel biphasic catalytic process for the selective hydrogenation of renewable polyunsaturated FAME of linseed, sunflower, soybean, rapeseed oils and *Cynara cardunculus* oils into monounsaturated (C18:1) esters catalyzed by water-soluble transition metal complexes in aqueous/organic two-phase system which is of great interest in the fields of production of high quality 1st generation biodiesel fuel and of biolubricants and possesses a great potential for the production of 2st generation biodiesel fuel.
- Development of a novel catalytic process for the hydrogenation of FAME catalyzed by transition metal complexes modified with sulfonated phosphites which exhibit much higher catalytic activity compared with conventional phosphites or even phosphines in organic monophasic systems.
- Research project on the development of a novel and highly efficient process for the hydrogenation of aromatic compounds such as benzene and dimer fatty acids containing aromatic units catalyzed by water-soluble transition metal TPPTS complexes in aqueous/organic two-phase systems which is of great interest in the fields of production of cyclohexane used for manufacturing nylon 6 and nylon 6.6 (about 90% of all polyamides) and hydrogenated dimer fatty acids which are ideal raw materials for lubricants, cosmetics and plastic additives possessing excellent thermal and oxidation resistance.
- Development of a novel hydrogenation reaction of unsaturated polymers such as polybutadiene-1,4-block-poly(ethylene oxide) and the completely water-insoluble heavy polybutadiene catalyzed by water-soluble Rh/TPPTS complexes in single aqueous and micellar aqueous/organic two-phase systems formed by conventional surfactants.

Major early contributions as researcher:

- During the early career research activities at Institute of Industrial Chemistry and Petrolchemistry, Aachen University of Technology (RWTH Aachen) in cooperation and exclusively financed by the Hoechst AG Werk Ruhrchemie Company on the development of a new industrial catalytic process for the hydroformylation of higher olefins employing water-soluble surface active transition metal catalytic complexes in micellar aqueous/organic two-phase systems developed a novel class of compounds, namely surfactant phosphines which combine both the properties of a ligand and a surface active agent in one molecule and successfully applied to efficient micellar rhodium-catalyzed hydroformylation of higher olefins in green and sustainable aqueous/organic two-phase systems. **Nowadays, this work** [B. Fell, G. Papadogianakis, *J. Mol. Catal.* 66 (1991) 143-154, (Citations: 174)] **is regarded as a classical approach** to convert efficiently apolar, heavier organic compounds in the polar aqueous medium using water-soluble surface active transition metal catalytic complexes and numerous surfactant phosphines have been developed from various research groups worldwide to modify transition metal complexes for efficient micellar catalysis in a broad spectrum of reactions carried out in green and sustainable aqueous/organic two-phase systems.
- Developed a novel class of ligands, the sulfonated phosphites, which are much more stable to hydrolysis than conventional phosphites. Rhodium catalytic complexes modified with sulfonated phosphites exhibit much higher catalytic activity in the hydroformylation of olefins compared with conventional phosphites or phosphines even at low temperatures and low partial pressures.
- Developed the first catalytic carbonylation reaction of the water-soluble C_6 platform chemical HMF using water-soluble transition metal TPPTS complexes namely $Pd(TPPTS)_3$ in completely aqueous medium which may yield a new route to high-value biobased chemicals from renewable resources.
- Developed a novel and more efficient route to the synthesis of the water-soluble catalytic complex $Pd(TPPTS)_3$ and applied for the first time the ^{17}O-NMR spectroscopy in mechanistic studies of water-soluble catalytic complexes in aqueous medium.
- Developed novel carbonylation and hydrocarboxylation reactions for the synthesis of carboxylic acids such as the non-steroidal antiinflammatory pharmaceutical ibuprofen as well as copolymerization

reactions of CO with olefins to produce perfectly alternating polyketones using water-soluble palladium catalytic complexes in completely aqueous and aqueous/organic two-phase systems. The water-soluble $Pd(TPPTS)_3$ catalyst exhibited much higher catalytic activity in the biphasic hydrocarboxylation reaction of lower olefins than their conventional counterparts which contrasts with the general perception that aqueous/organic two-phase catalysis normally exhibits lower rates compared to analogous reactions in conventional organic media.

- Developed a novel aqueous-phase hydrogenation of renewable C_6 carbohydrates such as fructose and the polysaccharide inulin (contains one glucose and 10 to 50 fructose units) catalyzed by water-soluble Ru/TPPTS complexes in aqueous media which may yield a new and attractive route to valuable mannitol from inulin.
- Developed a novel Wacker-type oxidation reaction of α-olefins to 2-alkanones catalyzed by water-soluble palladium modified with N-containing ligands by air in aqueous/organic two- phase systems.

REFEREE IN JOURNALS

- *Applied Catalysis B: Environmental*
- *Catalysis Today*
- *Applied Catalysis A: General*
- *Journal of Molecular Catalysis A: Chemical* (today: *Molecular Catalysis*)
- *Molecules*
- *Energy & Fuels*
- *Reaction Kinetics, Mechanisms and Catalysis*
- *Catalysis Communications*
- *Reactive and Functional Polymers*
- *European Polymer Journal*
- *Industrial Crops and Products*
- *Frontiers in Chemistry*
- *Catalysts*
- *New Journal of Chemistry*

REFEREE IN EUROPEAN RESEARCH PROGRAMS

Referee in the evaluation process of the European Program COST (*European Cooperation in Science and Technology*) on the proposal of the Working Group "*Green Chemistry through Aqueous Organometallic Catalysis*" for the COST ACTION D29 entitled "*Green/Sustainable Chemistry and Chemical Technology*"

MEMBER OF INTERNATIONAL EXAMINATION COMMITTEES FOR Ph.D. THESES

- 2/2001: Member of the 8th-membered international examination committee of the Delft University of Technology in the defence of G. Verspui on the Ph.D. thesis entitled "*Catalytic carbonylation reactions in aqueous media*"
- 12/2001: Member of the 8th-membered international examination committee of the Delft University of Technology in the defence of G.-J. ten Brink on the Ph.D. thesis entitled "*Green catalytic oxidations*"

REFEREE IN THE 7th EUROPEAN CONGRESS ON CATALYSIS (EUROPACAT - VII):

Referee in submitted works for oral and poster presentations in the 7th European Congress on Catalysis (EuropaCat - VII), 28/8-1/9/2005, Sofia, Bulgaria, organized by the Bulgarian and Greek Catalysis Societies

MEMBER OF THE SCIENTIFIC COMMITTEE ON THE 8th PANHELLENIC SYMPOSIUM ON CATALYSIS

Member of the scientific committee of the 8th Panhellenic Symposium on Catalysis entitled "*Catalysis and Renewable Resources*", 30/10-1/11/2004, Agia Napa, Cyprus, organized by the Greek Catalysis Society

LIST OF PUBLICATIONS

A. IN JOURNALS

1. B. Fell, G. Papadogianakis, Rhodium-catalyzed micellar two-phase hydroformylation of 1-tetradecene with surface active sulfobetaine derivatives of tris(2-pyridyl)phosphine as water-soluble complex ligands, *J. Mol. Catal.* 66 (1991) 143-154, https://doi.org/10.1016/0304-5102(91)80007-P.
2. B. Fell, G. Papadogianakis, W. Konkol, J. Weber, H. Bahrmann, Hydrolytic stable ammonium salts of

sulfonated organic phosphites and their use as cocatalysts in the rhodium-catalyzed hydroformylation of olefins, *J. Prakt. Chem./Chem.-Ztg.* 335 (1993) 75-82, https://doi.org/10.1002/prac.19933350112.

3. B. Fell, G. Papadogianakis, Rhodium-catalyzed two-phase hydroformylation of hex-1-ene with sulfonated tris(4-fluorophenyl)phosphines as water-soluble complex ligands, *J. Prakt. Chem./Chem.-Ztg.* 336 (1994) 591-595, https://doi.org/10.1002/prac.19943360706.
4. W. Makropoulos, G. Papadogianakis, N. Jakobi, F. Schmutzler, Fast and sensitive method for selenium measurement in serum by graphite furnace atomic absorption spectrometry, *Wissenschaft & Umwelt* 1994 (3/4) 133-138.
5. B. Fell, Ch. Schobben, G. Papadogianakis, Hydroformylation of homologous ω-alkenecarboxylic acid methyl esters catalyzed by water soluble rhodium carbonyl/tertiary phosphine complexes, *J. Mol. Catal. A: Chem.* 101 (1995) 179-186, https://doi.org/10.1016/1381-1169(95)00064-X.
6. S. Kanagasabapathy, Z. Xia, G. Papadogianakis, B. Fell, Hydroformylation with Water- and Methanol soluble Rhodium Carbonyl/phenyl-sulfonatoalkylphosphine Catalyst Systems - A New Concept for the Hydroformylation of Higher Molecular Olefins, *J. Prakt. Chem./Chem.-Ztg.* 337 (1995) 446-450, https://doi.org/10.1002/prac.19953370197.
7. G. Papadogianakis, L. Maat, R.A. Sheldon, Catalytic Conversions in Water: a Novel Carbonylation Reaction Catalysed by Palladium Trisulfonated Triphenylphosphine Complexes, *J. Chem . Soc., Chem. Commun.* (1994) 2659-2660, https://doi.org/10.1039/C39940002659.
8. G. Papadogianakis, J.A. Peters, L. Maat, R.A. Sheldon, Catalytic Conversions in Water: ^{17}O, $\{^{1}H\}^{31}P$ and ^{35}Cl NMR Study of a Novel Stoichiometric Redox Reaction Between $PdCl_2$, TPPTS and H_2O [TPPTS = $P(C_6H_4$-*m*-$SO_3Na)_3$]'', *J. Chem. Soc., Chem. Commun.* (1995) 1105-1106, https://doi.org/10.1039/C39950001105.
9. G. Papadogianakis, R.A. Sheldon, Catalytic Conversions in Water: Environmentally Attractive Processes Employing Water Soluble Transition Metal Complexes, *New J. Chem.* 20 (1996) 175-185, http://www.scopus.com/inward/record.url?eid=2-s2.0-0001212031&partnerID=MN8TOARS.
10. G. Papadogianakis, L. Maat, R.A. Sheldon, Catalytic Conversions in Water. Part 4: Carbonylation of 5-hydroxymethylfurfural (HMF) and benzyl alcohol catalysed by palladium trisulfonated triphenylphosphine complexes, *J. Mol. Catal. A: Chem.* 116 (1997) 179-190, https://doi.org/10.1016/S1381-1169(96)00192-6.
11. G. Papadogianakis, L. Maat, R.A. Sheldon, Catalytic Conversions in Water. Part 5: Carbonylation of 1-(4-isobutylphenyl)ethanol to Ibuprofen Catalysed by Water-Soluble Palladium-Phosphine Complexes in a Two-Phase System, *J. Chem. Technol. Biotechnol.*70 (1997) 83-91, https://doi.org/10.1002/(SICI)1097-4660(199709)70:1<83::AID-JCTB679>3.0.CO;2-7.
12. G. Papadogianakis, G. Verspui, L. Maat, R.A. Sheldon, Catalytic Conversions in Water. Part 6: A Novel Biphasic Hydrocarboxylation of Olefins Catalyzed by Palladium TPPTS Complexes [TPPTS= $P(C_6H_4$-*m*-$SO_3Na)_3$], *Catal. Lett.* 47 (1997) 43-46, https://doi.org//10.1023/a:1019015912635.
13. G. Papadogianakis, R.A. Sheldon, Catalytic conversions in water. An environmentally benign concept for heterogenization of homogeneous catalysis, *Catalysis*, *Specialist Periodical Reports, Royal Society of Chemistry,* 13 (1997) 114-193, https://doi.org/10.1039/9781847553256-00114.
14. G. Verspui, G. Papadogianakis, R.A. Sheldon, Catalytic Conversions in Water. Part 8: Carbonylation and Hydrocarboxylation Reactions Catalyzed by Palladium Trisulfonated Triphenylphosphine Complexes, *Catal. Today* 42 (1998) 449-458, https://doi.org/10.1016/S0920-5861(98)00127-8.
15. G. Verspui, G. Papadogianakis, R.A. Sheldon, Catalytic conversions in water. Part 9. High activity of the Pd/dpppr-s/Brönsted acid system in the alternating copolymerization of ethene and carbon monoxide {dpppr-s = C_3H_6-1,3-[$P(C_6H_4$-*m*-$SO_3Na)_2]_2$}', *Chem. Commun.* 1998, 401-402, https://pubs.rsc.org/en/content/articlepdf/1998/cc/a707572c.
16. G. Papadogianakis, L. Maat, R.A. Sheldon, C.J. Bishoff, B.D. Doggett, Tris[tris(sodium m-sulfonatophenyl)phosphino]palladium(0) enneahydrate, *Inorg. Synth.* 32 (1998) 25-29, https://doi.org/10.1002/9780470132630.ch3.
17. G.-J. ten Brink, I.W.C.E. Arends, G. Papadogianakis, R.A. Sheldon, Catalytic conversions in water. Part 10. Aerobic oxidation of terminal olefins to methyl ketones catalysed by water soluble palladium complexes, *Chem. Commun.* 1998, 2359-2360, https://doi.org/10.1039/A806532B.
18. A.W. Heinen, G.Papadogianakis, R.A. Sheldon, J.A. Peters, H. van Bekkum, Factors effecting the hydrogenation of fructose with a water soluble Ru/TPPTS complex: A comparison between homogeneous and heterogeneous catalysis *J. Mol. Catal. A: Chem.* 142 (1999) 17-26, https://doi.org/10.1016/S1381-1169(98)00288-X.
19. G. Verspui, J. Feiken, G. Papadogianakis, R.A. Sheldon, Catalytic conversions in water. Part 11: High active water-soluble palladium-catalysts in the hydrocarboxylation of olefins and the alternating copolymerization

of CO and olefins in water, *J. Mol. Catal. A: Chem.* 146 (1999) 299-307, https://doi.org/10.1016/S1381-1169(99)00065-5.
20. G.-J. ten Brink, I.W.C.E. Arends, G. Papadogianakis, R.A. Sheldon, Catalytic conversions in water. Part 13. Aerobic oxidation of olefins to methyl ketones catalysed by a water soluble palladium complex - mechanistic investigations, *Appl. Catal. A: Gen.* 194-195 (2000) 435-442, https://doi.org/10.1016/S0926-860X(99)00389-0.
21. G. Verspui, G. Elbertse, G. Papadogianakis, R.A. Sheldon, Catalytic conversions in water. Part 19: Smooth hydroformylation of N-allylacetamide in mono- and biphasic aqueous media, *J. Organomet. Chem.* 621 (2001) 337-343, https://doi.org/10.1016/S0022-328X(00)00751-8.
22. V. Kotzabasakis, E. Georgopoulou, M. Pitsikalis, N. Hadjichristidis, G. Papadogianakis, Catalytic conversions in aqueous media: a novel and efficient hydrogenation of polybutadiene-1,4-block-poly (ethylene oxide) catalyzed by Rh/TPPTS complexes in mixed micellar nanoreactors, *J. Mol. Catal. A: Chem.* 231 (2005) 93-101, https://doi.org/10.1016/j.molcata.2005.01.002.
23. A. Bouriazos, K. Mouratidis, N. Psaroudakis, G. Papadogianakis, Catalytic conversions in aqueous media. Part 2. A novel and highly efficient biphasic hydrogenation of renewable methyl esters of linseed and sunflower oils to high quality biodiesel employing Rh/TPPTS complexes, *Catal. Lett.* 121 (2008) 158-164, https://doi.org/10.1007/s10562-007-9314-3.
24. N. Nikolaou, C.E. Papadopoulos, A. Lazaridou, A. Koutsoumba, A. Bouriazos, G. Papadogianakis, Partial hydrogenation of methyl esters of sunflower oil catalyzed by highly active rhodium sulfonated triphenylphosphite complexes, *Catal. Commun.* 10 (2009) 451-455, https://doi.org/10.1016/j.catcom.2008.10.026.
25. V. Kotzabasakis, N. Hadjichristidis, G. Papadogianakis, Catalytic conversions in aqueous media: Part 3. Biphasic hydrogenation of polybutadiene catalyzed by Rh/TPPTS complexes in micellar systems, *J. Mol. Catal. A: Chem.* 304 (2009) 95-100, https://doi.org/10.1016/j.molcata.2009.01.032.
26. N.C. Kokkinos, A. Lazaridou, N. Nikolaou, G. Papadogianakis, N. Psaroudakis, A.K. Chatzigakis, C.E. Papadopoulos, Hydrogenation of a hydroformylated naphtha model (mixture of specific aldehydes) catalysed by Ru/TPPTS complex in aqueous media, *Appl. Catal. A: Gen.* 363 (2009) 129-134, https://doi.org/10.1016/j.apcata.2009.05.002.
27. A. Bouriazos, S. Sotiriou, C. Vangelis, G. Papadogianakis, Catalytic conversions in green aqueous media: Part 4. Selective hydrogenation of polyunsaturated methyl esters of vegetable oils for upgrading biodiesel, *J. Organomet. Chem.* 695 (2010) 327-337, https://doi.org/10.1016/j.jorganchem.2009.10.045.
28. C. Vangelis, A. Bouriazos, S. Sotiriou, M. Samorski, B. Gutsche, G. Papadogianakis, Catalytic conversions in green aqueous media: Highly efficient biphasic hydrogenation of benzene to cyclohexane catalyzed by Rh/TPPTS complexes, *J. Catal.* 274 (2010) 21-28, https://doi.org/10.1016/j.jcat.2010.06.004.
29. A. Bouriazos, E. Ikonomakou, G. Papadogianakis, Aqueous-phase catalytic hydrogenation of methyl esters of Cynara cardunculus alternative low-cost non-edible oil: A useful concept to resolve the food, fuel and environment issue of sustainable biodiesel, *Ind. Crops Prod.* 52 (2014) 205-210, https://doi.org/10.1016/j.indcrop.2013.10.040.
30. A. Bouriazos, S. Sotiriou, P. Stathis, G. Papadogianakis, Superior aqueous-phase catalytic hydrogenation activity of palladium modified with nitrogen-containing ligands compared with the TPPTS benchmark modifier in micellar nanoreactors, *Appl. Catal. B: Environ.* 150-151 (2014) 345-353, https://doi.org/10.1016/j.apcatb.2013.12.032.
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Renewable Energy	8.7
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C. CHAPTERS IN BOOKS

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F. PARTICIPATION IN WORKSHOP OF THE ROYAL NETHERLANDS ACADEMY OF ARTS AND SCIENCES

Participation in a workshop organized by the Royal Netherlands Academy of Arts and Sciences (*Koninklijke Nederlandse Akademie van Wetenschappen, KNAW*), Academy Committee for Chemistry (*Akademie Commissie voor de Chemie*) entitled "*Japan-The Netherlands: Precision in metal-mediated and -catalysed synthesis*", Amsterdam, 15-17 May 1995.

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