

# Curriculum vitae

Wirginia Maria Tomczak



Date of birth: 9 September 1986  
Nationality: polish  
Telephone: +33788923818, +48506831583  
E-mail: tomczak.wirginia@gmail.com  
Address: 19 rue Gabriel Audiso Résidence Chlorophylles 2, 13014 Marseille

**I gained my last professional experience in Institut de Radioprotection et de Sûreté Nucléaire (18-months of post-doctoral position). My research in IRSN was interdisciplinary, focused on the evolution of the variability of the solid-liquid distribution coefficient  $K_d$  in freshwater systems and soils. I am keenly interested in a modelling and statistic work in different fields of applications like nuclear, environment and chemical engineering.**

## Education

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- 2010-2014 **West Pomeranian University of Technology, Szczecin, Poland**  
Faculty of Chemical Technology and Engineering  
Doctoral thesis: « *Studies of separation of fermentation broths by membrane techniques* »  
Supervisor: prof. Marek Gryta  
University degree obtained: **Doctor of Philosophy in Technical Science within the scope of Chemical Technology, distinction**
- 2006-2011 **University of Technology and Life Sciences in Bydgoszcz, Poland**  
Institute of Mathematics and Physics  
Thesis subject: « *The use of random walk in modelling of polymer chains* »  
Supervisor: prof. Adam Gadomski  
University degree obtained: **Master of Science in Physics Technologies**
- 2005-2010 **University of Technology and Life Sciences in Bydgoszcz, Poland**  
Faculty of Chemical Technology and Engineering  
Thesis subject: « *The selection of temperature conditions for the process of biotransformation with parallel deactivation of bio-catalyzer* »  
Supervisor: dr. Ireneusz Grubecki  
University degree obtained: **Master of Science in Chemical Technology**

## Professional experience

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- 06/11/2017-05/05/2019 **Institut de Radioprotection et de Sûreté Nucléaire**  
Laboratoire de Recherche sur les Transferts de Radionucléides dans les Ecosystèmes Aquatiques  
Post-doctoral researcher  
Research subject: « *Evolution of the variability of the solid-liquid distribution coefficient from soils to freshwater systems* »  
Supervisor: dr. Patrick Boyer, HDR

- 01/12/2015-30/06/2017     **Université Aix-Marseille**  
 Laboratoire de Mécanique, Modélisation et Procédés Propres  
 Post-doctoral researcher  
 Research subject: « *Production of biohydrogen in a packed bed biofilm reactor* »  
 Supervisor: dr. Jean-Henry Ferrasse, HDR
- 02/01/2015-21/11/2015     **West Pomeranian University of Technology, Szczecin, Poland**  
 Faculty of Chemical Technology and Engineering  
 Project executing: « *Biotechnological conversion of glycerol to polyols and dicarboxylic acids* » PO IG 01.01.02-00-074/09  
 Supervisor: prof. Marek Gryta
- 03/02/2014-31/12/2014     **West Pomeranian University of Technology, Szczecin, Poland**  
 Faculty of Chemical Technology and Engineering  
 Specialist  
 Supervisor: prof. Marek Gryta
- 01/03/2011-31/12/2013     **West Pomeranian University of Technology, Szczecin, Poland**  
 Faculty of Chemical Technology and Engineering  
 Senior technician  
 Supervisor: prof. Marek Gryta

## Patents

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1. Gryta M., **Tomczak W.**, Morawski A.W., 2018. *Method for the osmotic membrane distillation with the solution by concentration and osmotic system for osmotic membrane distillation with the concentration of osmotic solution*, **PL 230010 B1**.
2. Gryta M., **Tomczak W.**, Morawski A.W., 2018. *Method for filtration of fermented solutions of glycerol and the system for filtering of fermented solutions of glycerol*, **PL 229975 B1**.
3. Gryta M., **Tomczak W.**, Morawski A.W., 2017. *Method for brewer's wort fermentation in the membrane bioreactor and the system for fermentation of brewer's wort in the membrane bioreactor*, **PL 225780 B1**.
4. Gryta M., Bastrzyk J., **Tomczak W.**, Karakulski K., Morawski A.W., 2017. *Method for separation of propane-1,3-diol solution obtained through the glycerol fermentation*, **PL 224628 B1**.
5. Gryta M., Bastrzyk J., **Tomczak W.**, 2016. *The way of separating and dehydrating of solutions obtained during glycerol fermentation and the system for separating and dehydrating of solutions obtained during glycerol fermentation*, **PL 220892 B1**.
6. Gryta M., **Tomczak W.**, 2015. *The fermentation process of glycerol and the system for glycerol fermentation*, **PL 220510 B1**.
7. Gryta M., Markowska-Szczupak A., **Tomczak W.**, Morawski A., 2014. *Process for glycerol fermentation with simultaneous removal of by-products*, **PL 217881 B1**.

## Articles in international peer-reviewed journals

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1. **Tomczak W.**, Boyer P., Krimissa M., Radakovitch O., 2019. *K<sub>d</sub> distributions in freshwater systems as a function of material type, mass-volume ratio, dissolved organic carbon and pH*. Applied Geochemistry 105, 68-77. DOI: **10.1016/j.apgeochem.2019.04.003**
2. **Tomczak W.**, Ferrasse J.-H., Giudici-Orticoni M.-T., Soric A., 2018. *Effect of hydraulic retention time on a continuous biohydrogen production in a packed bed biofilm reactor with recirculation flow of a liquid phase*, International Journal of Hydrogen Energy 43, 18883-18895. DOI: **10.1016/j.ijhydene.2018.08.094**
3. Gryta M., **Tomczak W.**, 2015. *Microfiltration of post-fermentation broth with backflushing membrane cleaning*, Chemical Papers 69, 544-552. DOI: **10.1515/chempap-2015-0060**
4. **Tomczak W.**, Gryta M., 2013. *The application of ultrafiltration for separation of glycerol solution fermented by bacteria*, Polish Journal of Chemical Technology 3, 115-120. DOI: **10.2478/pjct-2013-0057**
5. Gryta M., Markowska-Szczupak A., Bastrzyk J., **Tomczak W.**, 2013. *The study of membrane distillation used for separation of fermenting glycerol solutions*, Journal of Membrane Science 431, 1-8. DOI: **10.1016/j.memsci.2012.12.032**
- a. **Tomczak W.**, Boyer P., Krimissa M., 2019. *K<sub>d</sub> log-normal distributions of freshwater suspended sediments as a function of their size*, in preparation.
- b. **Tomczak W.**, Boyer P., Krimissa M., 2019. *Continuity of the solid-liquid distribution coefficient K<sub>d</sub> from soils to freshwater systems*, in preparation.

## Book chapters

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1. Gryta M., Bastrzyk J., **Tomczak W.**, 2014. *The application of membrane processes for separation of post-fermentation glycerol solutions*, Membranes and Membrane Processes in Environmental Protection, Polish Academy of Sciences Environmental Engineering Committee, Warszawa-Gliwice, 241-250. ISBN **978-83-63714-18**
2. Gryta M., **Tomczak W.**, Waszak M., 2014. *The influence of process parameters on the efficiency of the post-fermentation glycerol solutions nanofiltration*, Interdyscyplinarne Zagadnienia w Inżynierii i Ochronie Środowiska, Eds. T.M. Traczewska, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 273-288. ISBN **978-83-7493-836-5**
3. **Tomczak W.**, Gryta M., 2013. *Studies of the usage of ultrafiltration for separation of the post-fermentation solutions of glycerol*, Technologie Bezodpadowe i Zagospodarowanie Odpadów w Przemysle i Rolnictwie, Międzyzdroje, 141-144. ISBN **978-83-7518-556-0**
4. **Tomczak W.**, Gryta M., 2013. *Modelling of ultrafiltration of the fermentation broth from waste glycerol*, Technologie Bezodpadowe i Zagospodarowanie Odpadów w Przemysle i Rolnictwie, Międzyzdroje, 145-148. ISBN **978-83-7518-556-0**
5. **Tomczak W.**, Gryta M., 2013. *Determination of critical flux for ultrafiltration used for separation of glycerol fermentation broths*, 40th International Conference of Slovak Society of Chemical Engineering, Tatranske Matliare, Slovakia, 707-714. ISBN **978-80-89475-09-4**
6. **Tomczak W.**, Bastrzyk J., Gryta M., 2013. *The use of ion chromatography for determination of carboxylic acids in fermentation broths*, Chromatografia Jonowa 2013, Eds. R. Michalski, Oficyna Drukarska – J. Chemielewski, Zabrze, 195-203. ISBN **978-83-60877-96-8**

7. **Tomczak W.**, 2013. *Fouling of the ceramic ultrafiltration membrane of glycerol post-fermentation solutions*, Nowe Trendy w Naukach Inżynieryjnych 4, Eds. M. Kuczera, CREATIVETIME, Kraków, 155-163. **ISBN 978-83-63058-30-2**
8. **Tomczak W.**, 2013. *Application of Hermia model in the analysis of ultrafiltration process*, Młodzi Naukowcy Dla Polskiej Nauki, Eds. M. Kuczera, CREATIVETIME, Kraków, 159-154. **ISBN 978-83-63058-27-2**
9. **Tomczak W.**, 2013. *The investigations of separation of fermentation broth using membranes technique*, Inwestycja w innowacje – Volume II, Eds. R. Błasiak-Grudzień, Szczecin, 335-339. **ISBN 978-83-61985-16-7**
10. **Tomczak W.**, Kordus K., Gryta M., 2012. *The use of ceramic membranes for microfiltration of solutions after the fermentation of glycerol*, Podstawy Biotechnologii Środowiskowej – trendy, badania, implementacje, Volume IV, Eds. A. Węgrzyn, Gliwice, 123-129. **ISBN 978-83-916768-4-4**
11. **Tomczak W.**, Gryta M., 2012. *The investigation of microfiltration process of yeast suspension using the polypropylene membrane*, Interdyscyplinarne Zagadnienia w Inżynierii i Ochronie Środowiska, Eds. T.M. Traczewska, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 475-481. **ISBN 978-83-7493-671-2**
12. **Tomczak W.**, Gryta M., 2012. *Microfiltration of glycerol post-fermentation solution by using a ceramic membrane*, Interdyscyplinarne Zagadnienia w Inżynierii i Ochronie Środowiska, Eds. T.M. Traczewska, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 483-489. **ISBN 978-83-7493-671-2**
13. **Tomczak W.**, Bastrzyk J., Gryta M., 2012. *Studies on separation of solutions generated during the fermentation of glycerol*, Membrany i Procesy Membranowe w Ochronie Środowiska, Monografie Komitetu Inżynierii Środowiska PAN, Gliwice, 37-42. **ISBN 978-83-89293-23-7**
14. Gryta M., Sasim M., **Tomczak W.**, Bastrzyk J., 2012. *Determination of constituents of the fermentation broths by using liquid chromatography*, Chromatografia Jonowa 2012, Eds. R. Michalski, Oficyna Drukarska – J. Chemicielewski, Zabrze, 203-212. **ISBN 978-83-60877-72-2**
15. **Tomczak W.**, Gryta M., 2012. *The evaluation of polypropylene and ceramic membrane used for microfiltration*, In Proceedings of the 39th International Conference of Slovak Society of Chemical Engineering, Tatranske Matliare, Slovakia, 697-702. **ISBN 978-80-89475-04-9**
16. Gryta M., **Tomczak W.**, Bastrzyk J., 2012. *Biofouling of polypropylene membranes during glycerol fermentation by bacteria*, In Proceedings of the 39th International Conference of Slovak Society of Chemical Engineering, Tatranske Matliare, Slovakia, 1397-1405. **ISBN 978-80-89475-04-9**
17. **Tomczak W.**, Gryta M., 2011. *Optimization of anaerobic fermentation in a periodic bioreactor*, Interdyscyplinarne Zagadnienia w inżynierii i Ochronie Środowiska, Eds. T.M.Traczewska, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 433-440. **ISBN 978-83-7493-644-6**

### Articles, non-impact factor

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1. Gryta M., **Tomczak W.**, Bastrzyk J., 2013. *Studies on separation of bacterial fermentation broths of glycerol in the ultrafiltration-nanofiltration system*, Inżynieria i Aparatura Chemiczna, 52(5), 423-424.

## Oral presentations

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1. *The variability of the solid-liquid distribution coefficient  $K_d$  for freshwater systems*, Workshop: Assessing risks from radioactive legacy sites and how to better present uncertain information, Oxford, UK, 19-20/03/2019.
2. *Freshwater  $K_d$  distributions in function of mass-volume ratio, dissolved organic carbon and pH*, 3rd European Radiological Protection Research Week, Rovinj, Croatia, 1-5/10/2018.
3. *Updated  $K_d$  database for freshwater systems*, 2018 Interim Meetings of MODARIA II, IAEA Environment Laboratories in Monaco, Monaco, 15-16/05/2018.
4. *Packed bed biofilm reactor inoculated with anaerobic sludge for continuous biohydrogen production*, Junior Scientists Microbiology - Meeting of Marseille, Marseille, France, 18-19/05/2017.
5. *Experimental strategy for hydrogen production from wastewater*, 11th Hydrogenase Conference, Marseille, France, 10-14/06/2016.
6. *The application of ion chromatography for study of nanofiltration process*, X Scientific Conference: Ion Chromatography 2014, Zabrze, Poland, 8-10/04/2014.
7. *The application of ion chromatography for determination of carboxylic acids fermentation*, IX Scientific Conference: Ion Chromatography 2013, Zabrze, Poland, 24- 25/04/2013.
8. *Microfiltration post-fermentation glycerol solution using ceramic membrane*, the IV National Scientific Conference Interdisciplinary Issues in Engineering and Environmental Protection EKO DOK, Szklarska Poręba, Poland, 15-18/04/2012.
9. *Using ceramic microfiltration membranes after fermentation of glycerol solutions*, the National XVIII Students and Doctoral Symposium: Environmental Biotechnology, Wisła-Jarzębata, Poland, 20/02-3/03/2012.
10. *Optimization of anaerobic digestion in a periodical bioreactor*, the III National Scientific Conference Interdisciplinary Issues in Engineering and Environmental Protection EKO DOK, Szklarska Poreba, Poland, 4-6/04/2011.

## Poster communications

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1. *The application of ion chromatography for study of nanofiltration process*, X Scientific Conference: Ion Chromatography, Zabrze, Poland, 8-10/04/2014.
2. *Studies of the usage of ultrafiltration for separation of the post-fermentation solutions of glycerol*, Technologie Bezodpadowe i Zagospodarowanie Odpadów w Przemysle i Rolnictwie, Międzyzdroje, Poland, 11-14/06/2013.
3. *Modelling of ultrafiltration of the fermentation broth from waste glycerol*, Technologie Bezodpadowe i Zagospodarowanie Odpadów w Przemysle i Rolnictwie, Międzyzdroje, Poland, 11-14/06/2013.
4. *The study of ultrafiltration of postfermentation solutions of glycerol*, Influence of Young Scientists on the Achievements of Polish Science - IV Edition, Gdańsk, Poland, 14/04/2013.
5. *Studies on separation of broths generated during the fermentation of glycerol*, IX Scientific Conference Membranes and Membrane Processes in Environmental Protection, Zakopane, Poland, 30/05-2/06/2012.

6. *The evaluation of polypropylene and ceramic membrane used for microfiltration*, Slovak Society of Chemical Engineering, Slovakia, 21-25/05/2012.
7. *Biofouling of polypropylene membranes during glycerol fermentation by bacteria*, Slovak Society of Chemical Engineering, Slovakia, 21-25/05/2012.
8. *The investigation of microfiltration process of yeast suspension using the polypropylene membrane*, the IV National Scientific Conference Interdisciplinary Issues in Engineering and Environmental Protection EKO DOK, Szklarska Poręba, Poland, 15-18/04/2012.
9. *Investigation of fouling of microfiltration membrane and membrane cleaning methods*, XXIII EMS Membrane Summer School, Smardzewice, Poland, 11-15/09/2011.

## **Awards**

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1. Distinction for active participation in scientific discussions during the Conference: Influence of Young Scientists on the Achievements of Polish Science - IV Edition, Gdańsk, Poland, 14/04/2013.
2. Scholarship of the West Pomeranian University of Technology in 2013.
3. Third place in the competition for the best poster presentation at the Fourth National Scientific Conference Interdisciplinary Issues in Engineering and Environmental Protection EKO DOK 2012, Szklarska Poręba, Poland, 15-18/04/2012.
4. Scholarship "An investment in knowledge development for innovation in the region – the second edition" - Regional Labour Office in Szczecin carried out in 8.2.2 Regional Innovation Strategy PO KL 2007-2013 (April 2012 - November 2012)
5. Scholarship for the best PhD students of the West Pomeranian University of Technology for the academic years 2011/12 and 2012/13.
6. PhD scholarship increased subsidy for financing pro-quality jobs for academic years 2010/11 and 2012/13.

## **Certificates, courses**

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1. *French language course*, Level B1, CEA Cadarache, March 2018-November 2018.
2. Section: 62 - *Energétique, génie des procédés*, Corps: Maître de conférences, Date of the result: 08/02/2017, Qualification number: 17262302998
3. Seminar "*Funding mechanisms for young scientists in Poland - find your fund for research or internship*", organized by Regional Center for Innovation and Transfer Technology of the West Pomeranian University of Technology in Szczecin, Szczecin, Poland, 16/04/2013.
4. Course "*Establishing and running a SPIN-OFF/SPIN-OUT type business*", organized by Center for Foreign Languages and Education POLIGLOTUS, Szczecin, Poland, February-March 2012.
5. Course "*Protection and commercialization of intellectual property*", organized by e-PublicRelations.pl Witold Strobel, organized as part of the project "SPIN Entrepreneur of Western Pomerania", Szczecin, 2/02-10/03/2012.
6. Course "*Innovation and intellectual property management, protection of intellectual property and technology transfer*", organized by the National Employment Agency in Szczecin, Dziwnów, Poland, 10-12/12/2012.



7. *"Rhetoric and public speaking"* course organized by the National Employment Agency in Szczecin, Barlinek, Poland, 6-7/07/2012.
8. Certificate of *the Internal Auditor of Quality Management System* according to PN-EN ISO 9001:2008.

## Languages

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English - advanced, French – intermediate

## References

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**dr. Patrick Boyer, HDR**  
*ingénieur-chercheur*

IRSN/PSE-ENV/SRTE/LRTA  
Bât. 159 – Cadarache  
13115 Saint Paul lez Durance  
Tél. 04.42.19.94.36  
Email : patrick.boyer@irsn.fr

**dr. Rodolfo Gurriaran**  
*chef du laboratoire*

IRSN/PSE-ENV/SRTE/LRTA  
Bât. 159 – Cadarache  
13115 Saint Paul lez Durance  
Tél. 04.42.19.95.55  
Email : rodolfo.gurriaran@irsn.fr

*Virginia Tomozals*