

## ***Vasile LAVRIC, Professor***

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***Date of birth:*** March 8<sup>th</sup>, 1955

***Nationality:*** Romanian

***Ph.D. in Chemical Engineering*** - 1994

***Thesis:*** *Biological reactors with bubble swarm*, University *POLITEHNICA* of Bucharest

### ***Scientific Domains***

- Time scales of (bio)chemical processes
- Integration and intensification of (bio)chemical processes
- Biological, Biochemical and Chemical Reactors
- Systems optimization and optimal control
- Artificial Intelligence in (Bio)Chemical Engineering

### ***Work Experience***

#### **Abroad**

- *Invited Professor* Université Claude Bernard – Lyon 1, Lyon, France
- *Researcher* Université Jean Monnet, St.-Etienne, France  
Vrije Universiteit Brussel, Brussels, Belgium

#### **In Romania**

- *Ph. D. advisor* University *POLITEHNICA* of Bucharest  
(9 theses defended Faculty of Applied Chemistry and Material Science  
5 students) Department of Chemical and Biochemical Engineering  
*Professor* Bucharest, Romania  
*Assoc. Professor*  
*Lecturer*
- Director of Doctoral School “Applied Chemistry and Materials Science”, University *POLITEHNICA* of Bucharest

### ***Awards***

- **Nicolae TECLU** of the *Romanian Academy's Chemical Division* for *The Applications of Artificial Neural Networks in Chemical Engineering* - 1998

### ***Member***

- European Federation of Biotechnology, Section of Biochemical Engineering Science
- Romanian Society of Bioengineering and Biotechnology
- Romanian Society of Chemical Engineering

### ***Peer-Review Panels – national programs***

- **RELANSIN** National Program (*Economic Restart through Innovation and Research*)
- **CNCSIS** grants

- CEEEX grants
- PNCD II projects
- PNCD III projects

### Work

- Books & Book chapters 12/4 (author & co-author)
- Papers & Peer-Reviewed Contributions in Proceedings 153 (101+52)
- Unpublished Lectures & Communication 105
- Patents 1
- Research Projects 46 (15 as Director)

#### Most important

- Twin Screw Extruders as Polymerization Reactors (St.-Etienne, France)
- Introduction of chemical pinch technology and applications in petrochemical industries (bilateral Flemish-Romanian project, BIL99/65)
- PSA Process Modeling for Hydrogen Purification – Director
- Application of chemical pinch methodology in process industries (bilateral Flemish-Romanian project, WDGO339) – Director
- Flame Characterization and NOx Reduction through RTD Analysis (bilateral Flemish-Romanian project, BWS04/05/MECHWER2) – Director
- Complex behavior of mixed microbial populations induced by time scales and segregation. Case study: wastewater biological treatment process, PN2 – Ideas, 175/1.10.2007 – Director

### Reviewer

- Applied Thermal Engineering, Biotechnology Progress, Chemical and Biochemical Engineering, Chemical Engineering Communications, Chemical Engineering Journal, Chemical Engineering and Processing: Process Intensification, Chemical Engineering Research and Design, Chemical Engineering Science, Clean Technologies and Environmental Policy, Computers & Chemical Engineering, ENERGY - The International Journal, Environmental Science & Technology, Fuel Processing Technology, Industrial & Engineering Chemistry Research, Journal of Cleaner Production, Journal of Theoretical Biology, Water Environment Research, Water Research

### Recent scientific activity

#### ISI papers

1. Lavric, V., Isopescu, R., Maurino, V., Pellegrino, F., Pellutic, L., Ortel, E., Hodoroaba, V.-D., A new model for nano-TiO<sub>2</sub> crystals birth and growth in hydrothermal treatment using oriented attachment approach, Crystal Growth & Design, DOI: 10.1021/acs.cgd.7b00302
2. Calinescu, I., Lavric, V., Asofiei, I., Gavrilă\*, A. I., Trifan, A., Ighigeanu, D., Martin, D., Matei, C., Microwave assisted extraction of polyphenols using a coaxial antenna and a cooling system, Chemical Engineering & Processing: Process Intensification, DOI: 10.1016/j.cep.2017.02.003
3. Zwolińska, E., Gogulancea, V., Sun, Y, Lavric, V., Chmielewski, A., 2017, , Radiation Physics and Chemistry **138**, 29–36
4. Mihon, M., Tuta, C. S., Ion, A. C., Kozirowski, J. Niculae, D., Lavric, V., Draganescu, D., 2017, Influence of the separation parameters applied in chemical impurities determination, Farmacia, **65**(1), 153-158

5. Mousa N. E., Simonescu, C. M., Pătescu, R.-E., Onose, C., Tardei, C., Culiță, D. C. , Oprea, O., Patroi, D., Lavric, V., 2016, *Pb<sup>2+</sup> removal from aqueous synthetic solutions by calcium alginate and chitosan coated calcium alginate*, *Reactive and Functional Polymers*, **109**, 137-150
6. Radu, A. M., Josceanu, A. M., Dinculescu, D. D., Lavric, V., 2016, *Enhanced partition model of 4-nitrophenol in water – octanol system. Effects of association/dissociation processes*, *Fluid Phase Equilibria*, **427**, 575-582
7. Stepan, E., Enascuta, C.-E., Oprescu, E.-E., Radu, E., Radu, A., Galan, A.-M., Vasilievici, G., Lavric, V., Velea, S., **2016**, *Intermediates for synthetic paraffinic kerosene from microalgae*, *Fuel*, **172**, 29-36
8. Mihon, M., Tuța, C., Lavric, V., Niculae, D., Drăgănescu, D., **2015**, *Quality control and stability study of the sodium fluoride injection [18F]NaF*, *FARMACIA*, **63** (5), 765-769
9. Mihon, M., Tuta, C., Leonte, R., Ion, A.C., Lavric, V., Niculae, D., **2015**, *An improved methodology for determination of radiochemical and chemical impurities in the synthesis process of 18F-FGD(2-[18F] fluoro-2-deoxy-d-glucose)*, *Environmental Engineering and Management Journal*, **14**(2), 289-296
10. Gogulancea, V., Lavric, V., **2015**, *A mathematical modeling study for the flue gas removal of SO<sub>2</sub> and NO<sub>x</sub> using high energy electron beams*, *Plasma Chemistry and Plasma Processing*, **35**(1), 259-277
11. Musina, A., Bocokic, V., Lavric, V., van Zutphen, S., **2014**, *Phosphorus-Based Polymers for Selective Capture of Platinum Group Metals*, *Industrial & Engineering Chemistry Research*, **53**(34), 13362-13369
12. Gogulancea, V., Lavric, V., **2014**, *Flue Gas Cleaning by High Energy Electron Beam - Modeling and Sensitivity Analysis*, *Applied Thermal Engineering*, **70**, 1359-4311
13. Ofiteru, I.D., Bellucci, M., Picioreanu, C., Lavric, V., Curtis, T.P., **2014**, *Multi-scale modelling of bioreactor-separator system for wastewater treatment with two-dimensional activated sludge floc dynamics*, *WATER RESEARCH*, **50**, 382-395
14. Bucs, S., Radu, I.A., Lavric, V., Vrouwenvelder, J.S., Picioreanu, C., **2014**, *Effect of different commercial feed spacers on biofouling of reverse osmosis membrane systems: a numerical study*, *Desalination*, **343**, 26-37
15. Márton, M.-R., Krumbein, A., Platz, S., Schreiner, M., Rohn, S., Rehmers, A., Lavric, V., Mersch-Sundermann, V., Lamy, E., **2013**, *Determination of bioactive, free isothiocyanates from a glucosinolate-containing phytotherapeutic agent: A pilot study with in vitro models and human intervention*, *Fitoterapia*, **85**, 25–34
16. Dogaru, L., Lavric, V., **2012**, *Pareto approach in designing optimal semi-continuous water networks*, *Industrial and Engineering Chemistry Research*, **51**(17), 6116–6136
17. Ofiteru, I. D., Ferdes, M., Knapp, C. W., Graham, D. W., Lavric, V., **2012**, *Conditional confined oscillatory dynamics of Escherichia coli strain K12-MG1655 in chemostat systems*, *Applied Microbiology and Biotechnology*, **94**(1), 185-92
18. Tudor, R., Lavric, V., **2011**, *Dual-objective Optimization of Integrated Water/Wastewater Networks*, *Computers and Chemical Engineering* **35**(12), 2853-2866

### Published communications

1. Gogulancea, V., Lavric, V., 2014, *Plug Flow vs. Discontinuous Modelling Approaches for Plasma – Based Depollution of Exhausts*, (24th European Symposium on Computer Aided Process Engineering – ESCAPE 24, June 15-18, 2014, Budapest, Hungary) *Computer-Aided Chemical Engineering* (Eds. Jiří Jaromír Klemeš, Petar Sabev Varbanov and Peng Yen Liew), **33**(A), 469-74 (ISBN 978-0-444-63456-6, ISSN 1570-7946)
2. Gogulancea, V., Lavric, V., 2013, *Flue gas cleaning by high energy electron beam – enhancement effects due to water droplets generation*, *Chemical Engineering Transactions*, **35**, 697-702, (ISBN 978-88-95608-26-6; ISSN 1974-9791, DOI:10.3303/CET1335116)

3. Palău, G. R., Lavric, V., 2013, Optimization of PID controller parameters in the case of batch styrene suspension polymerization, *Chemical Engineering Transactions*, 35, 937-942, (ISBN 978-88-95608-26-6; ISSN 1974-9791, DOI:10.3303/CET1335156)
4. Palău, G. R., Isopescu, R., Lavric, V., 2012, Continuous Function Approximation for Dispersed Phase Distribution in Suspension Polymerization, (15th Conference on Process Integration, Modeling and Optimisation for Energy Saving and Pollution Reduction - PRES'12, August 25-29, 2012, Prague, Czech Republic), *Chemical Engineering Transactions*, 29, 931-936 (ISBN 978-88-95608-20-4, ISSN 1974-9791)
5. Ofițeru, I.D., Bellucci, M., Lavric, V., Picioreanu, C., Curtis, T.P., 2011, Multi-scale modeling of activated sludge floc structure formation in wastewater bioreactors (21th European Symposium on Computer Aided Process Engineering, May 29 – June 1, 2011, Chalkidiki, Greece), *Computer-Aided Chemical Engineering* (Eds. E.N. Pistikopoulos, M.C. Georgiadis and A. Kokossis), 29 (A), 96-100
6. Dogaru, E-L., Lavric, V., 2011, Multi-Objective Optimization of Semi-Continuous Water Networks, *Chem. Eng. Trans.*, 25, 623-625, (ISBN 978-88-95608-16-7, ISSN 1974-9791)
7. Buzatu, P., Lavric, V., 2011, Submerged membrane bioreactors for wastewater treatment. Multi-objective optimization, *Chem. Eng. Trans.*, 25, 267-272, (ISBN 978-88-95608-16-7, ISSN 1974-9791)
8. Tudor, R., Lavric, V., 2011, Energy Savings vs. Freshwater Consumption when Optimizing Total Wastewater Networks, *Chem. Eng. Trans.*, 25, 569-574, (ISBN 978-88-95608-16-7, ISSN 1974-9791)