

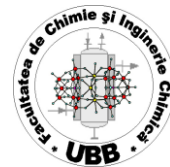
## TOPICS OF THE PHD SUPERVISORS for Admission to the Doctoral Studies in Chemical Engineering September 2021

### PhD supervisor Prof. Călin Cristian CORMOȘ

1. Fundamental elements of chemical reaction engineering applied for homogenous and heterogeneous systems;
2. Fundamental elements of conceptual design and thermal integration of chemical processes;
3. Basic elements of CO<sub>2</sub> capture and utilization technologies.

### *Bibliography*

1. O. Levenspiel, *Chemical reaction engineering*, John Wiley & Sons, New York, 1999.
2. E. Gavrilă, I. Bildea, V. Topan, S. Agachi, *Ingineria reacțiilor chimice. Utilaj specific*, Universitatea Babeș – Bolyai, Cluj – Napoca, vol. I+II, 1988.
3. C.C. Cormos, *Ingineria Reacțiilor Chimice, Aplicații practice pentru studiul reactoarelor omogene și eterogene gaz-lichid*, Presa Universitara Clujana, 2014.
4. R. Smith, *Chemical process – Design and integration*, 2-nd edition, John Wiley & Sons, 2016.
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## PhD supervisor Prof. Vasile Mircea CRISTEA

1. Fundamentals of modelling and simulation of the transfer phenomena (momentum, heat and mass) for systems with concentrated and distributed parameters;
2. Fundamentals of automatic control of chemical processes using classical algorithms and algorithms based on mathematical models;
3. Fundamentals of artificial intelligence: artificial neural networks, fuzzy logic and genetic algorithms;
4. Fundamentals of optimization and optimal control of chemical processes.

### *Bibliography*

1. M.V. Cristea, P.S. Agachi, *Elemente de Teoria Sistemelor*, Editura Risoprint, Cluj-Napoca, 2002.
2. P.S. Agachi, M.V. Cristea, *Basic Process Engineering Control*, Editura Walter De Gruyter GmbH, Berlin, 2014.
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4. P.S. Agachi, *Automatizarea proceselor chimice*, Casa cărții de Știință, Cluj-Napoca, 1994.
5. A. Sipos, V. M. Cristea, E. Mudura, A. Imre-Lucaci, D. Bratfalean, *Modelarea, simularea și conducerea avansată a bioprocесelor fermentative*, Editura Universității "Lucian Blaga" din Sibiu, Vol. II, 2010.
6. K.M. Hangos, I.T. Cameron, *Process Modelling and Model Analysis*, Academic Press, 2001.



## PhD supervisor Prof. Petru ILEA

1. Thermodynamics and electrochemical kinetics;
2. Elements of electrochemical engineering;
3. Environmental electrochemistry;
4. Electrosynthesis.

### *Bibliography*

1. L. Oniciu, L. Mureșan, *Electrochimie aplicată*, Presa universitară Clujeană, Cluj Napoca, 1998.
2. L. Oniciu, P. Ilea, I.C. Popescu, *Electrochimie Tehnologică*, Editura Casa Cărții de Știință Cluj-Napoca, 1995.
3. P. Ilea, *Electrosinteze anorganice*, Editura Casa Cărții de Știință Cluj-Napoca, 2005.
4. N. Vaszilcsin, Maria Nemes, L. Oniciu, P. Ilea, *Electrochimie - aplicații numerice*, Editura Politehnica, Timișoara, 1999.



## PhD supervisor Prof. Graziella Liana TURDEAN

1. Nanomaterials. Structural characterization and properties of nanomaterials;
2. Chemically modified electrodes. Preparation methods;
3. Electrochemical techniques of investigation for bio/materials having redox, electrocatalytic or host-guest complexation properties. Cyclic voltammetry.

### *Bibliography*

1. (a) Cao G., *Nanostructures and nanomaterials. Synthesis, properties, and applications*, Imperial College Press, 2004, chap 8, pp. 329-344;  
(b) Hodoroaba V.-D., Unger W., Shard A., *Characterization of Nanoparticles: Measurement Processes for Nanoparticles*, 2019, pp. 7-217;  
(c) Tantra R., *Nanomaterial Characterization: An Introduction*, 2016, pp. 153-179.
2. (a) Durst R. A., Baumner A. J., Murray R. W., Buck R. P., Andrieux C. P., *Chemically modified electrodes: recommended terminology and definitions*, Pure & App. Chem., 1997, 69(6), 1317-1323;  
(b) Kenneth L. Brown, *Electrochemical preparation and characterization of chemically modified electrodes*, book chapter, DOI: 10.5772/intechopen.81752.
3. (a) Mureșan L., Oniciu L., *Electrochimie aplicată*, Presa Universitară Clujeană, Cluj-Napoca, 1998;  
(b) Bard A. J., Faulkner L. R., *Electrochemical methods. Fundamentals and applications*, Wiley, New York, 2001, chap 6, p. 226-243;  
(c) Kaifer A., Gomez-Kaifer M., *Supramolecular Electrochemistry*, Wiley, New York, 1999.