



Școala Doctorală de Chimie

Nr. 276/21.03.2023

**TEMATICA PENTRU CONCURSUL DE ADMITERE LA DOCTORAT**  
**sesiunea septembrie 2023****Prof. univ. dr. habil. Cecilia ARSENE**

1. Hidrocarburi aromatice policiclice și derivați ai acestora în atmosfera zonei urbane Iași, nord-estul României. Atribuirea surselor și estimarea riscurilor asupra sănătății umane (ro)

*Polycyclic aromatic hydrocarbons (PAHs) and their derivatives in the atmosphere of the Iasi urban area, north-eastern Romania: Sources apportionment and health risk assessments (en)*

**Bibliografie/References**

1. Lv, Y., Li, X., Xu, T.T., Cheng, T.T., Yang, X., Chen, J.M., Iinuma, Y., Herrmann, H., Size distributions of polycyclic aromatic hydrocarbons in urban atmosphere: sorption mechanism and source contributions to respiratory deposition, *Atmospheric Chemistry and Physics*, 16, 2971-2983, 2016.
2. Maceira, A., Marce, R.M., Borrull, F., Analytical methods for determining organic compounds present in the particulate matter from outdoor air, *Trends in Analytical Chemistry*, 122, 115707, 2020.
3. Olariu, R.I., Vione, D., Grinberg, N., Arsene, C., Sample preparation for trace analysis by chromatographic methods, *Journal of Liquid Chromatography & Related Technologies*, 33, 1174-1207, 2010.
4. Singh, R., Yadav, A., Chopra, A., Christopher, J., Kapur, G.S., Comparison of five different HPLC columns with different particle sizes, lengths and make for the optimization of seven polycyclic aromatic hydrocarbons (PAH) analysis, *Springer Nature Applied Sciences*, 1, 313, 2019.
5. Song, W., Cao, F., Lin, Y.C., Haque, M., Wu, X., Zhang, Y., Zhang, C., Xie, F., Zhang, Y.L., Extremely high abundance of polycyclic aromatic hydrocarbons in aerosols from a typical coal-combustion rural site in China: Size distribution, source identification and cancer risk assessment, *Atmospheric Research*, 248, 105192, 2021.

**Prof. univ. dr. Elena BÎCU**

1. Noi compuși azaheterociclici penta- și hexa-atomici. Sinteze și aplicații (ro)

*New penta- and hexa-atomic azaheterocyclic compounds. Syntheses and applications (en)*

**Bibliografie/References**

1. Moise, I.M., Bicu, E., Farce, A., Dubois, J., Ghinet, A., Indolizine-phenothiazine hybrids as the first dual inhibitors of tubulin polymerization and farnesyl transferase with synergistic antitumor activity, *Bioorganic Chemistry*, 103, 104184, 2020.
2. Metwally, N.H., Mohamed, M.S., Ragb, A.E., Design, synthesis, anticancer evaluation, molecular docking and cell cycle analysis of 3-methyl-4,7-dihydropyrazolo [1,5-a]pyrimidine derivatives as potent histonelysine demethylases (KDM) inhibitors and apoptosis inducers, *Bioorganic Chemistry*, 88, 102929, 2019.



3. Makhaeva, G.F., Lushchekina, N.P., Boltneva, S.V., Novel potent bifunctional carboxylesterase inhibitors based on a polyfluoroalkyl-2-imino-1,3-dione scaffold, *European Journal of Medicinal Chemistry*, 218, 113385, **2021**.
4. Ragab, E.A., Metwally, N.H., Mohamed, M.S., Synthesis of some novel pyrazolo[1,5-a]quinazolines and their fused derivatives, *Synthetic Communications*, 47, 148 – 158, **2017**.
5. Zhuang, C., Zhang, W., Sheng, C., Zhang, W., Xing, C., Miao, Z., Chalcone: A Privileged Structure in Medicinal Chemistry, *Chem. Rev.*, 117, 7762–7810, **2017**.

## Prof. univ. dr. habil. Mihail-Lucian BÎRSĂ

### 1. Noi flavonoide triciclice cu proprietăți antimicrobiene (ro) *New tricyclic flavonoids with antimicrobial properties (en)*

#### Bibliografie/References

1. World Health Organization. *Global Antimicrobial Resistance and Use Surveillance System (GLASS) Report*; World Health Organization: Geneva, Switzerland, **2021**.
2. Cushnie, T.P.T., Lamb, A.J., Recent advances in understanding the antibacterial properties of flavonoids, *Int. J. Antimicrob. Agents*, 38, 99–107, **2011**.  
<https://doi.org/10.1016/j.ijantimicag.2011.02.014>.
3. Sarbu, L.G., Bahrin, L.G., Babii, C., Stefan, M., Birsa, M.L., Synthetic flavonoids with antimicrobial activity: A review, *J. Appl. Microbiol.*, 127, 1282–1290, **2019**.  
<https://doi.org/10.1111/jam.14271>
4. Bahrin, L.G., Hopf, H., Jones, P.G., Sarbu, L.G., Babii, C., Mihai, A.C., Stefan, M., Birsa, L.M., Antibacterial structure-activity relationship studies of several tricyclic sulphur-containing flavonoids, *Beilstein J. Org. Chem.*, 12, 1065–1071, **2016**.  
<https://doi.org/10.3762/bjoc.12.100>.
5. Bahrin, L.G., Apostu, M.O., Birsa, L.M., Stefan, M., The antibacterial properties of sulfur containing flavonoids, *Bioorganic Med. Chem. Lett.*, 24, 2315–2318, **2014**.  
<https://doi.org/10.1016/j.bmcl.2014.03.071>.
6. Babii, C., Savu, M., Motrescu, I., Birsa, L.M., Sarbu, L.G., Stefan, M., The antibacterial synthetic flavonoid BrCl-Flav exhibits important anti-*Candida* activity by damaging cell membrane integrity. *Pharmaceuticals*, 14, 1130, **2021**.  
<https://doi.org/10.3390/ph14111130>.
7. Babii, C., Mihalache, G., Bahrin, L.G., Neagu, A.N., Gostin, I., Mihai, C.T., Sarbu, L.G., Birsa, L.M., Stefan, M., A novel synthetic flavonoid with potent antibacterial properties: In vitro activity and proposed mode of action. *PLoS ONE*, 13, e0194898, **2018**.  
<https://doi.org/10.1371/journal.pone.0194898>

## Prof. univ. dr. Gabi DROCHIOIU

### 1. Poluanți majori ai mediului: implicații biomedicale și metode specifice de investigare a acțiunii metalelor grele, dinitrofenolilor și cianogenilor (ro) *Major environmental pollutants: biomedical implications and specific methods to investigate the action of heavy metals, dinitrophenols and cyanogens (en)*

#### Bibliografie/References

1. Drochioiu, G., Gradinaru, R. V., Risca, I. M., Mangalagiu, I. *Toxicologie-Aplicații în protecția mediului, industrie, agricultură, biologie și criminalistică*. Edit. Univ. Al. I. Cuza Iași, **2013**.
2. Airinei, A., Nicolescu, A., Drochioiu, G., Rusu, E., Jurcoane, S., Rusu, G., Dinitrophenols-from Chemistry to Life and Health. PIM Publ. House, Iasi, **2010**.



3. Drochioiu, G., Mangalagiu, I., Druta, I. *Elemente de teorie și practică toxicologică*. (Elements of toxicological theory and praxis). Edit. Demiurg, Iași, 2001.
4. Khopkar, S. M., *Environmental pollution monitoring and control*. New Age International, 2007.
5. Reichenauer, T.G., Germida, J.J., Phytoremediation of organic contaminants in soil and groundwater, *ChemSusChem*, 1, 708-717, 2008.
6. Surleva, A., Drochioiu, G., A modified ninhydrin micro-assay for the determination of total cyanogens in plants. *Food Chem.*, 141, 2788–2794, 2013.

## Prof. univ. dr. Ionel MANGALAGIU

### 1. Compuși hibridi azaheterociclici cu potențiale aplicații practice (ro)

#### *Hybrid azaheterocyclic compounds with potential practical applications (en)*

#### Bibliografie/References

1. Antoci, V., Cucu, D., Zbancioc, Ghe., Moldoveanu, C., Mangalagiu, V., Amariuca-Mantu, D., Aricu, A., Mangalagiu, I.I., Bis-(imidazole/benzimidazole)-pyridine derivatives: synthesis, structure and antimycobacterial activity. Part XII, *Future Medicinal Chemistry*, 12, 207-222, 2020.
2. Olaru, A., Vasilache, V., Danac, R., Mangalagiu I.I., Antimycobacterial activity of nitrogen heterocycles derivatives: 7-(pyridine-4-yl)- indolizine derivatives. Part VII, *Journal of Enzyme Inhibition and Medicinal Chemistry*, 32, 1291-1298, 2017.
3. Mantu, D., Antoci, V., Moldoveanu, C., Zbancioc, Ghe., Mangalagiu, I.I., Hybrid imidazole (benzimidazole) / pyridine (quinoline) derivatives and evaluation of their anticancer and antimycobacterial activity, *Journal of Enzyme Inhibition And Medicinal Chemistry*, 31, 96-103, 2016.
4. Mantu, D., Antoci, V., Nicolescu, A., Deleanu, C., Vasilache, V., Mangalagiu, I.I., Synthesis, stereochemical studies and antimycobacterial activity of new acetylhydrazines pyridazinone, *Current Organic Synthesis*, 14, 112-119, 2017.
5. Zbancioc, Ghe., Zbancioc, A.M., Mangalagiu, I.I., Ultrasound and microwave assisted synthesis of dihydroxyacetophenone derivatives with or without 1,2-diazine skeleton, *Ultrasonics Sonochemistry*, 21, 802-811, 2014.
6. Kuchkova, K., Aricu, A., Barba, A., Vlad, P., Shova, S., Secara, E., Ungur, N., Zbancioc, Ghe., Mangalagiu, I.I., An efficient and straightforward method to new homodrimane sesquiterpenoids with diazine units, *Synlett*, 24, 697-700, 2013.
7. Mantu, D., Luca, M.C., Moldoveanu, C., Zbancioc, Ghe., Mangalagiu I.I., Synthesis and antituberculosis activity of some new pyridazine derivatives, Part II, *Eur. J. Med. Chem.*, 45, 5164-5168, 2010.

## Prof. univ. dr. habil. Romeo-Iulian OLARIU

### 1. Studiul degradării atmosferice a unor solvenți organici curați (ro)

#### *Study of the atmospheric degradation of selected clean organic solvents (en)*

#### Bibliografie/References

1. Byrne, F. P., Forier, B., Bossaert, G., Hoebbers, C., Farmer, T.J., Hunt, A.J., A methodical selection process for the development of ketones and esters as bio-based replacements for traditional hydrocarbon solvents. *Green Chemistry*, 20, 4003–4011, 2018.
2. Finlayson-Pitts, B. J.; Pitts, N. J., Jr. *Chemistry of the Upper and Lower Atmosphere*; Academic Press: San Diego, CA, 2000.
3. Alder, C.M., Hayler, J.D., Henderson, R.K., Redman, A.M., Shukla, L., Shuster, L.E., Sneddon, H.F., Updating and further expanding GSK's solvent sustainability guide, *Green Chemistry*, 18, 3879–3890, 2016.

**Prof. univ. dr. Aurel PUI**

1. **Nanostructuri oxidice avansate pentru fotocataliza si producerea de energie verde (ro)**  
*Advanced oxide nanostructures for catalysis and green energy production (en)*

**Bibliografie/References**

1. Vladislav Sadykov (Editor), *Advanced Nanomaterials for Catalysis and Energy, Synthesis, Characterization and Applications*, ISBN: 9780128148075, 1st Edition - August 27, **2018**.
2. Borhan, A.I., Herea, D.D., Husanu, M.A., Popescu, D.G., Borca, C.N., Huthwelker, T., Bulai, G., Radu, I., Dirtu, A.C., Dirtu, D., Mita, C., Stoian, G., Ababei, G., Lupu, N., Pui, A., Ghercă, D., Straightforward FeOOH nanografting of Al-based SrTiO<sub>3</sub> perovskite material as core-shell nanoflower-like heteronanostructure with enhanced solar light-driven photodegradation capability, *Applied Surface Science*, 614, 156247, **2023**.
3. Gherca, D., Borhan, A.I., Mihai, M.M., Herea, D.D., Stoian, G., Roman, T., ... & Buema, G. (2022), Magnetite-induced topological transformation of 3D hierarchical MgAl layered double hydroxides to highly dispersed 2D magnetic hetero-nanosheets for effective removal of cadmium ions from aqueous solutions, *Materials Chemistry and Physics*, 284, 126047, **2022**.
4. Roman, T., Ghercă, D., Borhan, A.I., Grigoraș, M., Stoian, G., Lupu, N., ... & Pui, A., Nanostructured quaternary Ni<sub>1-x</sub>Cu<sub>x</sub>Fe<sub>2-y</sub>Ce<sub>y</sub>O<sub>4</sub> complex system: Cerium content and copper substitution dependence of cation distribution and magnetic-electric properties in spinel ferrites. *Ceramics International*, 47(13), 18177-18187, **2021**.

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