

Dr. DANUTA LESZCZYNSKA
Professor of Environmental Engineering and Environmental Science

Jackson State University, Jackson, MS
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Industrial Systems & Technology
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EDUCATION

Ph.D. in Environmental Engineering, Technical University of Wroclaw, Wroclaw, Poland

M.S./B.S in Organic Chemistry/Chemical Engineering, Technical University of Wroclaw, Wroclaw, Poland

PROFESSIONAL EXPERIENCE

Professor, Department of Civil and Environmental Engineering, Jackson State University, Jackson, MS, 2006-present

Visiting Research Faculty, Lawrence Livermore National Laboratory, Livermore, CA, 2006-2008

Fulbright Scholar, 2004-2005

Associate Professor, Department of Civil and Environmental Engineering, Florida State University, 1995-2006

Assistant Professor, Department of Chemistry, Jackson State University, Jackson, Mississippi 1991- 1995

Post Doctorate Associate, Dept. of Environmental Sciences and Engineering, University of Florida 1987- 1990.

Engineering Faculty, Sanitary Engineering, Technical University of Wroclaw, Poland, 1978 – 1987

PERTINENT TEACHING, RESEARCH, AND SYNERGISTIC AREAS

Teaching Areas (Undergraduate and Graduate): General environmental engineering and environmental science (regulations, management, design, and treatment); design of water quality management facilities (constructed wetlands, stormwater storages, etc.); water reuse engineering, soil and groundwater remediation engineering, water quality, water and wastewater treatment, environmental impact (toxicity, hazard, health impact, interactions between pollutants), environmental chemistry, engineering ethics.

Current Research Areas: Sustainable study on agricultural organic waste converted to the semi-nano carbon-based materials (biochar); development of biosensors based on nanoparticles; computational (QSAR) and experimental study on properties and toxicity of nanomaterials; environmental impact of nanoparticles on quality of water (drinking and surface/groundwater/seawater); assessment, management, and treatment of water, stormwater; soil remediation (metallic contamination).

Selected synergistic activities:

- Fulbright Scholar
- Fellow of the National Academy of Inventors, US
- Co-organizer of several international conferences and symposia (Croatia, Poland, Ukraine)
- Recognized as an educational and research mentor (Florida State University; US Department of State of International Education; the Council for International Exchange of Scholars, etc.)
- Recognized as Distinguish Alumni of Technical University of Wroclaw, Poland
- Reviewer to various scientific panels and journals)

RESEARCH AND INNOVATION:

A. SELECTED PEER-REVIEWED COLLABORATIVE PUBLICATIONS AND BOOK CHAPTERS (2019-2023)

1. A.P Toropova, A.A, Toropov, A. Roncaglioni, E. Benfenati, D. Leszczynska, J. Leszczynski, CORAL: Model of Ecological Impact of Heavy Metals on Soils via the Study of Modification of Concentration of Biomolecules in Earthworms (*Eisenia fetida*), *Archives of Environmental Contamination and Toxicology*, 85, 504-515, 2023

2. A.R. Toropova, A.A. Toropov, A. Roncaglioni, E. Benfenati, D. Leszczynska, J. Leszczynski, The validation of predictive potential via the system of self-consistent models: the simulation of blood-brain barrier permeation of organic compounds, *Research Square*, <https://doi.org/10.21203/rs.3.rs-2607398/v1>, online February, **2023**
3. S. Kar, K. Pathakoti, D. Leszczynska, P. B. Tchounwou, J. Leszczynski, *In vitro* and *in silico* study of mixtures cytotoxicity of metal oxide nanoparticles to Escherichia coli: a mechanical approach, *Nanotoxicology*, 16 (5), 1-14, **2022**
4. A. A. Toropov, A. P. Toropova, A. M. Veselinović, D. Leszczynska, J. Leszczynski, SARS-CoV M^{pp} inhibitory activity of aromatic disulfide compounds: QSAR model, *Journal of Bimolecular Structure and Dynamics*, 40 (2), 780-786, **2022**
5. **BOOK CHAPTER: Chapter 6:** L. K. Sviatenko, L. Gorb, D. Leszczynska, M. K. Shukla, Jerzy Leszczynski, Application of Computational Approaches to Analysis of Multistep Chemical Reactions of Energetic Materials: Hydrolysis of Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX) and Octahydro-1,3,5,7-tetranitro-1,3,5,7-Tetrazocine (HMX), in book *Practical Aspects of Computational Chemistry V, European Academy of Science*, Editors: J. Leszczynski, M.K.Szukla, Springer Nature, ISBN978-3-030-83243-8, pages: 215-232, **2022**
6. S. Kar, K. Pathakoti, P. B. Tchounwou, D. Leszczynska, J. Leszczynski, Evaluating the cytotoxicity of a large pool of metal oxide nanoparticles to Escherichia coli: Mechanistic understanding through In Vitro and In Silico studies. *Chemosphere*, 264, 128428, **2021**
7. A. P. Toropova, A. A. Toropov, D. Leszczynska, J. Leszczynski, Application of quasi-SMILES to the model of gold-nanoparticles uptake in A549 cells, *Computers in Biology and Medicine*, 136(5):104720, **2021**
8. A. Uroic Stefanko, D. Leszczynska, Evaluation of Cd²⁺, Cu²⁺, Pb²⁺, and Zn²⁺ Removal by Cow Manure and Corn Stover Biochar with the Emphasis on the Solubility-Normalized Dubinin-Radushkevich Approach for the Computation of the Adsorption Potential (ϵ), *Journal of Environmental Engineering*, 147(12): 0402106 **2021**
9. L.K Sviatenko, L Gorb, D Leszczynska, SI Okovytyy, M. K. Shukla, J. Leszczynski, Catalytic role of the solvated electron in spontaneous degradation of insensitive munition compounds: computational chemistry investigation, *Structural Chemistry*, 32 (2), 1-7, **2021**
10. A. P.Toropova, A. A.Toropov, D. Leszczynska, J. Leszczynski. How can the CORAL software be used to select compounds for efficient treatment of neurodegenerative diseases? *Toxicol. Appl. Pharm.*: 408: 115276, **2020**
11. A. Uroic Stefanko, D. Leszczynska, Impact of biomass source and pyrolysis parameters on physicochemical properties of biochar manufactured for innovative applications, *Frontiers in Energy Research*, 8, 138, **2020**
12. A. A. Toropov, N. Sizochenko, A. P. Toropova, D. Leszczynska, J. Leszczynski, Advancement of predictive modeling of zeta potentials (ζ) in metal oxide nanoparticles with correlation intensity index (CII). *J. Mol. Liq.*: 317: 113929, **2020**
13. Alla P. Toropova, Andrey A. Toropov, Danuta Leszczynskab and Jerzy Leszczynski. The index of ideality of correlation: models of the flash points of ternary mixtures, *New J. Chem.* 44; 4858, **2020**
14. O. Tsendra, A. D. Boese, O. Isayev, L. Gorb, A. Michalkova Scott, F. C. Hill, M. M. Ilchenko, V. Lobanov, D. Leszczynska, J. Leszczynski, Adsorption of nitrogen-containing compounds on hydroxylated α -quartz surfaces, *RSC Advances*. 9, 36066-36074, **2019**
15. Liudmyla K. Sviatenko, Leonid Gorb, Danuta Leszczynska, Sergiy I. Okovytyy, Manoj K. Shukla, Jerzy Leszczynski, Role of Singlet Oxygen in the Degradation of Selected Insensitive Munitions Compounds: A Comprehensive, Quantum Chemical Investigation, *J. Phys. Chem. A*, 123, 35, 7597-7608, **2019**
16. B. Sajjadi, T. Zubatiuk, D. Leszczynska, J. Leszczynski, W-YChen, Chemical activation of biochar for energy and environmental applications: a comprehensive review, *Rev Chem Eng.*,35(7): 777–815, **2019**
17. A. A. Toropov , A. P. Toropovaa, , D. Leszczynska , J. Leszczynski, Ideal correlations for biological activity of peptides, *Biosystems*, 181, 51-57, **2019**
18. A. P. Toropova, A. A. Toropov, E. Benfenati, D. Leszczynska, J. Leszczynski, Virtual Screening of Anti-Cancer Compounds: Application of Monte Carlo Technique, *Anti-Cancer Agents in Medicinal Chemistry*, 19 (2), 148-153, **2019**
19. Y. Zhanga , R. Fanb , Q. Zhanga , Y. Chena,c , O. Sharifia , D. Leszczynska , R. Zhanga , Q. Dai, Synthesis of CaWO₄-biochar Nanocomposites for Organic Dye Removal, *Journal: Materials Research Bulletin*, 110, 169-173, **2019**
20. A. P. Toropova A. A. Toropov·A. M. Veselinović J. B. Veselinović D. Leszczynska, J. Leszczynski, Semi-correlations combined with the index of ideality of correlation: a tool to build up model of mutagenic potential, *Molecular and Cellular Biochemistry*, 452:133–140, **2019**
21. A.B.M. Zakaria, D. Leszczynska, Electrochemically Prepared Unzipped Single Walled Carbon Nanotubes-MnO₂ Nanostructure Composites for Hydrogen Peroxide and Glucose Sensing, *Chemosensors*, 7(1), 1, **2019**

B. PATENTS:

1. B. Wysocki, D. Leszczynska, W. Swieszkowski, K. Kurzydowski, “Method for obtaining a composite coating on titanium implants for tissue engineering” patent number: **US 10,053,791 B2, August 21, 2018**
2. D. Leszczynska, M. Babincova, P. Babinec, J. Leszczynski, “Magnetoliposomes Composition for Targeted Treatment of Biological Tissue and Associated Methods” **European Patent Organization Patent No. EP1255533, November 6, 2002**