LISA CATALIN

Contribution in project: applications of neural networks and genetic algorithms to processes from chemical engineering field, databases manager

1. Personal information

Name and surname: Lisa CĂTĂLIN

Date and place of birth: June, 10th, 1964, Iaşi - Iaşi County, Romania

Present academic position: Lecturer

Current address: Department of Chemical Engineering, Faculty of Chemical Engineering and Environmental Protection, "Gh. Asachi" Technical University of Iasi, 73, Dimitrie Mangeron Blvd., 700050-Iasi, Romania

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2. Education

2004-2009 PhD Diploma, PhD thesis: “Applications of Artificial Intelligence in Polymerization Reaction Engineering”.

1983–1988 Licence in Chemical Engineering, Faculty of Industrial Chemistry, Technical University “Gheorghe Asachi” Iasi, Macromolecular compound technology.

1982 Baccalaureate “Emil Cernătescu” High School, Iaşi.

3. Professional experience

1998-present, lecturer at the Department of Chemical Engineering, Faculty of Chemical Engineering and Environmental Protection, "Gh. Asachi" Technical University of Iasi, Romania.

1991-1998, assistant Professor at the Department of Chemical Engineering, Faculty of Chemical Engineering and Environmental Protection, "Gh. Asachi" Technical University of Iasi, Romania.

1990-1991, associate assistant, Faculty of Chemical Engineering, Department of Chemical Engineering, Technical University „Gh. Asachi" Iasi.

1988–1990, working stage in industry, with the Company of plastics processing, "UNIPLAST", Focsani – Vrancea County.

4. Research interests

- **Modeling and optimization of chemical processes**

The latest research in this domain are related to the application of modelling methods based on artificial intelligence instruments - neural networks and genetic algorithms. Some examples of the results obtained in this field: • modelling of the viscosimetric behaviour of some binary liquid systems using neural networks; • neural network modelling of the interphase mass transfer in heterogeneous liquid-liquid systems; • application of different machine learning algorithms (nearest neighbor, k-nearest neighbor, C4.5, random tree, random forest, REPTree, NNGEP, and neural networks) to predict the crystalline behaviour for a large database containing organic compounds.

5. Selected publications

*Abbreviations: **IF** = Impact Factor, **RS** = Relative influence Score of the journal, **PI-1** = Principal Investigator as paper's first author, **PI-C** = Principal Investigator as paper corresponding author.*

Summary of the publications: Total no. of papers = **51**; ISI indexed no. of papers =**21**; BDI no. = **20**; no. of papers in conference volumes = **10**; no. of patents = **2**; no. of contracts as execution member = **15**.

Cumulative IF = 11.898; cumulative RS = 6.4920.

Selected papers

1. „Prediction of liquid - crystalline property using support vector machine classification”
Cristina Butnariu, **Catalin Lisa**, Florin Leon, Silvia Curteanu
Journal of Chemometrics, **2013, article in press** (**IF = 1.937, RS = 1.30036**).

2. „A neuro-evolutive technique applied for predicting the liquid crystalline property of some organic compounds”
Elena-Niculina Dragoi, Silvia Curteanu, **Catalin Lisa**
Engineering Optimization, 44, 1261-1277, **2012** (**IF = 0.936, RS = 1.05509**).

3. „Ferrocene derivatives thermostability prediction using neural networks and genetic algorithms”
Gabriela Lisa, Daniela Apreutesei Wilson, Silvia Curteanu, **Catalin Lisa**, Ciprian George Piuleac, Victor Bulacovschi
Thermochimica Acta, 521, 26-36, **2011** (**IF = 1.899, RS = 1.7374, PI-C**).

4. “Prediction of the liquid crystalline property using different classification methods”
Florin Leon, **Catalin Lisa**, Silvia Curteanu
Molecular Crystals and Liquid Crystals, DOI: 10.1080/15421400903574391, vol. 518, p. 129–148, **2010 (IF = 0.537, RS = 0.36702).**

5. “Neural networks used for the prediction of the structure-thermal stability relation ”
Catalin Lisa, Lisa Gabriela, Silvia Curteanu
Revue Roumaine de Chimie, 54(11-12), 1133-1142, **2009 (IF = 0.263, RS = 0.12983, PI-1)**.

6. “Prediction of excess thermodynamic properties from experimental refractive index of binary mixtures 2. Artificial neural network modelling”
Lisa Gabriela, Silvia Curteanu, **Catalin Lisa**,
Revue Roumaine de Chimie, 53(9), 859-867, **2008 (IF = 0.263, RS = 0.12983)**.

7. „Machine learning methods used to predict the liquid crystalline behavior of some copolyethers”
Florin Leon, **Silvia Curteanu**, Cătălin Lisa, Nicolae Hurduc
Molecular Crystals and Liquid Crystals, vol. 469, p. 1-22**, 2007 (IF = 0.537, RS = 0.36702)**.

8. „Neural network based predictions for the liquid crystal properties of organic compounds”
Cătălin Lisa, **Silvia Curteanu**
Computer-Aided Chemical Engineering, 24, pag. 39-45, si Volumul 17th European Symposium on Computer Aided process Engineering, ESCAPE 17, 27-30 May, Bucuresti, **2007**.

9. “Modeling of Viscosity Variation in Free Radical Polymerization of Methyl Methacrylate”
Silvia Curteanu, **Cătălin Lisa**
Revue Roumaine de Chimie, 48(8), pag. 651-659, **2003 (IF = 0.263, RS = 0.12983)**.

Selected patents

1. „Head extrusion blow”
   Catalin Lisa
   No. 103158 Decis. No. 3026/ 8.01.1992.

2. „Microcrystalline cellulose complexing with metal ions”
   Catalin Lisa
   No. 138899/1989.

Selected contracts

1. International project Cost FP0802, “*Experimental and Computational Micro-Characterization Techniques in Woods Mechanics*”, member of Working Group 3, Computational Modelling,Chair of action dr. Karin Hofstette, http://cost-fp0802.tuwien.ac.at/news.html, **2009 – 2011.**

2. International project COST Action FP1006 “*Bringing new functions to wood through surface modification*”, member of working group WG 3: Process and Service life modeling, Chair of action dr. Stefanie Wieland, http://cost-fp1006.fh-salzburg.ac.at/, **2011-2013**.

3. „Applications of neural networks and genetic algorithms in polymer reaction engineering”, grant CERES, no. 4-22/2004, member **2004-2006.**

4. „Modeling and optimal control based on artificial intelligence tools for chemical and process engineering applications”, PN II, grant no. 71 – 006/18.09.2007, **2007-2010.**

5. „New nanostructured systems used for controlled release of pharmacological agents”, CEEX 108/9.10.2007, member, **2006-2008**.

6. "High performance multifunctional polymeric materials for medicine, pharmacy, microelectronics, energy / information storage, environment protection" Platform CNCSIS no. 69/2006, member, **2006-2008.**