



# REVISTA DE CHIMIE

Chemistry  
Petrochemistry  
Chemical engineering  
Process equipment  
Biotechnology  
Environment protection  
Marketing & Management  
Applications in medicine  
Dental medicine  
Pharmacy

July 2020

Print ISSN: 0034-7752 / Online ISSN: 2668-8212

<https://revistadechimie.ro>  
<https://doi.org/10.37358/Rev.Chim.1949>

REVISTA DE CHIMIE FOUNDED IN 1949  
BUCURESTI ROMANIA



REVISTA DE  
CHIMIE SRL

## **EDITORIAL BOARD**

### **Editor-in-Chief**

**Petru FILIP**

C. D. Nenitescu Institute of Organic Chemistry, Bucharest

### **Deputy Editor-in-chief**

**Gheorghita JINESCU**

Politehnica University of Bucharest

### **Deputy Editor-in-chief**

**Victor VOICU**

Romanian Academy

### **Deputy Editor-in-chief**

**Kamel EARAR**

Dunarea de Jos University of Galati

## **MEMBERS**

### **Leonard AZAMFIREI**

University of Medicine, Pharmacy, Science and Technology of Targu Mures

### **Irinel Adriana BADEA**

University of Bucharest

### **Alexandru T. BALABAN**

Texas A&M University of Galveston, SUA

Romanian Academy

### **Ovidiu Gabriel BRATU**

Carol Davila University of Medicine and Pharmacy

### **Simona Gabriela BUNGAU**

University of Oradea

### **Miron Teodor CAPROIU**

C. D. Nenitescu Institute of Organic Chemistry, Bucharest

### **Dragos CIUPARU**

Petroleum - Gas University of Ploiesti

### **Andrei E. DANET**

University of Bucharest

### **Elena DIACU**

Politehnica University of Bucharest

### **Gheorghe DUCA**

Academy of Sciences of Moldova

**Laurentiu FILIPESCU**  
Politehnica University of Bucharest

**Norina Consuela FORNA**  
University of Medicine and Pharmacy Grigore T. Popa, Iasi, Romania

**Anca-Irina GALACTION**  
University of Medicine and Pharmacy Grigore T. Popa, Iasi, Romania

**Ionel HAIDUC**  
Romanian Academy

**Valeriu V. JINESCU**  
Politehnica University of Bucharest

**Andrei JITIANU**  
City University of New York

**Jiri Jaromir KLEMES**  
University of Panonia Veszprem Ungaria

**Jean-Marie LEHN**  
Universite Louis Pasteur, Strasbourg, Franta

**Gheorghe MARIA**  
Politehnica University of Bucharest  
Romanian Academy

**Gheorghe D. MATEESCU**  
Case Western Reserve University, Cleveland, SUA

**Lucian MOTIU**  
AGER Consulting SRL

**Gheorghe NECHIFOR**  
Politehnica University of Bucharest

**Csaba PAIZS**  
Babes-Bolyai University of Cluj

**Luoana Florentina PASCU**  
INCD ECOIND Bucharest

**Virgil PERCEC**  
University of Pennsylvania, Philadelphia, SUA

**Eli RUCKENSTEIN**  
The State University of New York at Buffalo, SUA

**Sorin Ioan ROSCA**  
Politehnica University of Bucharest

**Bouchta SAHRAOUI**  
University of Angers, UFR Sciences  
Institute of Sciences and Molecular Technologies of Angers, France

**Paul VASILESCU**  
Politehnica University of Bucharest

**Maria ZAHARESCU**  
Institute of Physical Chemistry Ilie Murgulescu, Bucharest  
Romanian Academy

**Yanzhong ZHANG**  
College of Chemistry, Chemical Engineering & Biotechnology Donghua University, China

General Manager  
**Ion ANDRONACHE**

Publisher Chief  
**Gabriel-Lucian RADU**  
Politehnica University of Bucharest

Manager  
**Alice CRISTEA**  
Revista de Chimie SRL

Computer Editing  
**Monica BALUTA**

*Impact factor 2019: 1.755*

## CONTENTS

### Special issue ION BALASANIAN

#### **LILIANA LAZAR, IOANA FECHETE**

Preface. "Innovative Materials, Processes and Technologies" Honoring Prof.univ.dr.eng. Ion BALASANIAN.....1

**GABRIELA BUEMA, NICOLETA LUPU, HORIA CHIRIAC, GABRIELA CIOBANU,**

**OLGA KOTOVA, MARIA HARJA**

Modeling of Solid-Fluid Non-Catalytic Processes for Nickel Ion Removal.....4

**DANA-MIHAELA ASIMINICESEI, IONELA CATALINA VASILACHI, MARIA GAVRILESCU**

Heavy Metal Contamination of Medicinal Plants and Potential Implications on Human Health .....16

**BIANCA AZAMFIRE, DUMITRU BULGARIU, LAURA BULGARIU**

Efficient Removal of Toxic mMetal Ions (Pb(II) and Hg(II) Ions in Single Component Systems by  
Adsorption on Romanian Clay Material.....37

**LOREDANA FORMINTE (LITU), GABRIELA CIOBANU, GABRIELA BUEMA,**

**NICOLETA LUPU, HORIA CHIRIAC, CONSUELO GÓMEZ DE CASTRO, MARIA HARJA**

New Materials Synthesized by Sulfuric Acid Attack Over Power Plant Fly Ash .....48

**LUCIAN GAVRILA, ANDREI-IONUT SIMION, CRISTINA-GABRIELA GRIGORAS, LIDIA FAVIER**

An Eco-Friendly Solution for the Efficient Elimination of Pentoxifylline from Water:  
An Operational Performance Investigation.....59

**EUGENIA TEODORA IACOB TUPOSE, TUDOR BALAU MINDRU, IOAN MAMALIGA**

Wool and Leather Waste Materials with Thermo-Insulating Properties .....70

**LILIANA LAZAR, HEINZ KOESER, IOANA FECHETE, ION BALASANIAN**

A Modelling Approach of the Catalytic Oxidation of Volatile Organic Compounds  
in the SCR-DeNOx Monolithic Reactor.....79

**CLAUDIA ROMAN, MIGUEL ANGEL DELGADO, LILIANA LAZAR,**

**MOISÉS GARCIA-MORALES**

Computational Design Applied to Equilibrium-Staged and Rate-Based Absorption Processes .....88

**MARIUS STOIAN, LILIANA LAZAR, FLORENT UNY, FREDERIC SANCHETTE,**

**IOANA FECHETE**

Chemical Vapour Deposition (CVD) Technique for Abatement of Volatile Organic Compounds (VOCs).....97

**CSABA DEZSŐ ANDRÁS , ÉVA MOLNOS , LÁSZLÓ MÁTYÁS , ALEXANDRU SZÉP**

New Fitting Method for Vapour-Liquid Equilibrium Data and its Application for  
Ethanol-Water Distillation Process Modeling.....114

**GEORGIANA MARDARE (BALUSESCU), TEODOR MALUTAN, LILIANA LAZAR**

Determination of Scopolamine by Gas Chromatography from Different Parts of the *Datura innoxia* Biomass.....126

**DORINA STANCIULESCU, GABRIELA CARJA, DOINA LUTIC**

Fabrication of Zinc-Iron-Aluminum Layered Double Hydroxides with Controlled Micromorphology  
in a Tailored Aqueous - Organic Synthesis Medium.....137

**MARIA HARJA, AMALIA-MARIA Sescu, LIDIA FAVIER, DOINA LUTIC**

Doping Titanium Dioxide with Palladium for Enhancing the Photocatalytic Decontamination  
and Mineralization of a Refractory Water Pollutant.....145

**OANA TEODORA CIUPERCA, CARMEN ELENA TEBRENCU, LILIANA LAZAR, IRINA VOLF**

Kinetic Study on Solid-Liquid Extraction of Condensed Tannins from *Rosa Canina* Branches and Stems.....153

**IRINA MOROSANU, LAVINIA TOFAN, CARMEN TEODOSIU, CARMEN PADURARU**

Equilibrium Studies of the Sequential Removal of Reactive Blue 19 Dye and Lead (II) on Rapeseed Waste .....162

**DOINA LUTIC, DANUT-GABRIEL COZMA**

Statistical Processing and Correlations Between Concentrationsof Some Atmospheric Pollutants  
in Suceava and Botosani Counties.....175

**MARIA MAGDALENA PRICOPI, ROMEU CHELARIU, NICOLAE APOSTOLESCU,**

**DOINA-MARGARETA GORDIN, DANIEL SUTIMAN, DANIEL MARECI**

Corrosion Behavior of Some Timonb Alloys in Ringer Solution.....187

**INGRIDA PLIOPAITE BATAITIENE, RAIMONDAS GRUBLIAUSKAS,**

**RAIMONDAS BUCKUS, TATJANA JUZSAKOVA, IGOR CRETESCU**

The Dependence of Volumetric Radon Activity in Indoor Air on Environmental Conditions.....197

**LILIANA LAZAR, ION BALASANIAN***Book Review*

Atmosphere Pollution.....	210
<b>LIVIU BIRZAN, VICTORITA TECUCEANU, CONSTANTIN C. DRAGHICI, ANAMARIA HANGANU, ALEXANDRU C. RAZUS</b>	
Preparation of Azulenes Substituted at Seven-Membered Cycle with 2- and 3-thiophenevinyl Groups.....	212
<b>MIHAI BRANZEI, MIHAI OVIDIU COJOCARU, LEONTIN NICOLAE DRUGA, MARIANA ION</b>	
Obtaining the Controlled Sulphonitrocarburized Layer Phase Compositions, by the Variation of the Solid Powdery Medium Components.....	225
<b>DUŠAN Đ. PAUNOVIĆ, SNEŽANA S. MITIĆ, IVANA D. RAŠIĆ MIŠIĆ, MILAN N. MITIĆ, ALEKSANDRA N. PAVLOVIĆ, GORDANA M. KOCIĆ</b>	
Analyses of Metals Impact on <i>Humulus lupulus</i> Strobili Antioxidant Capacity .....	234
<b>HONGHUI TANG, XI DAI, QIANG LI, YANCHAO QIAO, FENG TAN</b>	
Selective Leaching of LiFePO <sub>4</sub> by H <sub>2</sub> SO <sub>4</sub> in the Presence of NaClO <sub>3</sub> .....	248
<b>IOANA-CRISTINA MARINAS, ELIZA OPREA, MIHAELA BULEANDRA, CORALIA BLEOTU, IRINEL ADRIANA BADEA, PAULINA ANASTASIU, VERONICA LAZAR, IOANA-DIANA GARDUS, MARIANA CARMEN CHIFIRIUC</b>	
Chemical, Antimicrobial, Antioxidant and Anti-proliferative Features of the Essential Oil Extracted from the Invasive Plant <i>Solidago canadensis</i> L. ....	255
<b>ADINA NEGREA, IOANA IULIANA BUSUIOCEANU</b>	
Numerical Estimation of the Hand-Arm System Joints Reactions Caused by an Impact Based On Anthropometric Data.....	265
<b>ROVENA VERONICA PASCU</b>	
Laser Ablation Ceramic Target for 8YSZ High-k Dielectric Electrolyte thin Films Precessed by PLD on Si(100) and Pt/Si(111).....	272
<b>GHEORGHE SURPATEANU, ILEANA DENISA NISTOR, ANA-MARIA GEORGESCU, NECULAI CATALIN LUNGU</b>	
Syntone Chemistry. Theoretical Study on the Formation of Cysteine, Aspartic Acid, Asparagine and Threonine.....	278
<b>TANG CHANG-BIN, NIU HAO, LU YU-XUAN, WANG FEI, ZHANG YU-JIE, XUE JUAN-QIN</b>	
Electrodeposited MnO <sub>2</sub> -based Capacitive Composite Electrodes for Pb <sup>2+</sup> Adsorption.....	284
<b>NICOLETA PLATON, VASILICA-ALISA ARUS, ANA-MARIA GEORGESCU, ILEANA DENISA NISTOR, NARCIS BARSAN</b>	
White Bread Fortified with Calcium from Eggshell Powder.....	299
<b>MIHAELA BOGDAN, SIMONA BUNGAU, DELIA MIRELA TIT, LUCIAN COPOLOVICI, TAPAN BEHL, PAVEL OTRISAL, LOTFI ALEYA, GABRIELA CIOCA, DOINA BERESCU, DIANA UIVAROSAN, DANA MARIA COPOLOVICI</b>	
Variations in the Chemical Composition of the Essential Oil of <i>Lavandula angustifolia</i> Mill., Moldoveanca 4 Romanian Variety.....	307
<b>FLORENTINA LAURA CHIRIAC, IULIANA PAUN, VASILE IANCU, PIRVU FLORINELA, MARCELA NICULESCU, TOMA GALAON</b>	
Occurrence of Phenolic Endocrine Disruptors in Danube Delta, Romania .....	316
<b>MIRUNA DRAGANESCU, CATERINA DUMITRU, LILIANA BAROIU, ALINA IANCU, CAMELIA VIZIREANU, MANUELA ARBUNE, ADRIAN BEZNEA</b>	
Antioxidant Profile of Buckwheat Honey from the Republic of Moldova.....	325
<b>VASILE-ION IANCU, NICULESCU MARCELA, DIANA PUIU, TOMA GALAON, JANA PETRE, LUOANA FLORENTINA PASCU</b>	
Determination of Hypoglycemic Agents in Surface Water Samples Using SPE-LC-MS/MS Method .....	337
<b>MIAN JAHANZAIB RASHEED, KAFEEL AHMAD, ZAFAR IQBAL KHAN, SHAHZADI MAHPARA, TASNEEM AHMAD, YONGJUN YANG, KINZA WAJID, MUHAMMAD NADEEM, HUMAYUN BASHIR, ASMA ASHFAQ, MUDASRA MUNIR, IFRA SALEEM MALIK, IJAZ RASOOL NOORKA, MADIHA KIRAN, MUHAMMAD FIAZ QAMAR, ILKER UGULU</b>	
Assessment of Trace Metal Contents of Indigenous and Improved Pastures and Their Implications for Livestock in Terms of Seasonal Variations.....	347

<b>ION-VIOREL PATROESCU, STEFANIA GHEORGHE, IOANA ALEXANDRA IONESCU, IONUT CRISTEA, IRINA EUGENIA LUCACIU, ROXANA-ELENA SCUTARIU, MIHAI NITA-LAZAR</b>	
Toxicity and Benefits of Urban Stabilized Sludge Intended for Agriculture Use.....	365
<b>ECATERINA ANCA SERBAN, GABRIELA GEANINA VASILE, TOMA GALAON, CORINA ENE, LUOANA FLORENTINA PASCU</b>	
HG-ICP-OES Technique, a Useful Tool for Arsenic Determination in Soft Water.....	379
<b>EUGENIU VASILE, CRISTINA-ILEANA COVALIU, OANA STOIAN, GIGEL PARASCHIV, ECATERINA MATEI, GINA-ALINA CATRINA (TRAISTARU), ALEXANDRU CIRIC</b>	
Manganese Ions Removal from Industrial Wastewater.....	391
<b>YONGJUN YANG, ZAFARIQBAL KHAN, KAFEEL AHMAD, NIMRA ARSHAD, SAIF UR REHMAN, MUHAMMAD FAHAD ULLAH, KINZA WAJID, SHEHZADI MAHPARA, HUMAYUN BASHIR, MUHAMMAD NADEEM, TASNEEM AHMAD, MUDASRA MUNIR, IFRA SALEEM MALIK, ASMA ASHFAQ, ILKER UGULU, JING MA, FU CHEN</b>	
Does the Chromium Element in Forages and Fodders Grown in Contaminated Pasture Lands Cause Toxicity in Livestock: Assessing the Potential Risk.....	397
<b>ZAFAR IQBAL KHAN, IFRA SALEEM MALIK, JING MA, FU CHEN, YONGJUN YANG, KAFEEL AHMAD, KINZA WAJID, HUMAYUN BASHIR, MUHAMMAD NADEEM, SAIF UR REHMAN, MUHAMMAD FAHAD ULLA, ASMA ASHFAQ, MUDASRA MUNIR, ILKER UGULU, YUNUS DOGAN</b>	
Assessment of Cadmium in Maize and Millet of Different District using Canal and Wastewater Irrigation.....	406
<b>DRAGOS ALBU, ALICE ALBU, ROMINA MARINA SIMA, MIRCEA OCTAVIAN POENARU, ADRIAN NEACSU, OANA TOADER, RADU CHICEA, LIANA PLES</b>	
The Corelation Between Serum Estradiol (C <sub>23</sub> H <sub>32</sub> O <sub>3</sub> ) Impact on Selected Biomarkers and Outcome of Fresh Embryo Transfer in Comparison with Freeze All Strategy <i>in vitro</i> Fertilisation Patients.....	419
<b>TEIM BAAJ, AHMED ABU-AWWAD, MIRCEA BOTOCA, OCTAVIAN MARIUS CRETU, ELENA ARDELEANU, IOAN MUSTA, IOAN TILEA, SHAMSA BAAJ, ANDREI PAUNESCU, ANDREI RUSMIR, SILVIU LATCU, SEBASTIAN PLESA, ADINA ELENA PROTESI, ALIN CUMPANAS, LAURENTIU SIMA</b>	
Biochemical and Chemical Lipid Profile and Blood Pressure Assessment in Arterial Hypertension with Chronic Kidney Disease.....	425
<b>ZENAIDA CEAUSU, BOGDAN SOCEA, MIHAI DIMITRIU, DIANA GHEORGHIU, IRINA PACU, NICOLAE BACALBASA, DRAGOS SERBAN, MARIANA COSTACHE, MIHAI CEAUSU</b>	
Immunohistochemistry and Biochemistry Features of Interstitial Mesenchymal Cells in Ischemic Cardiac Diseases ....	436
<b>DRAGOS SERBAN, CRISTIAN MIHAI BRANESCU, DANIEL ALIN CRISTIAN, ANA MARIA DASCALU</b>	
Bilirubin, Interleukin 6 (IL 6) and Lipopolysaccharide – Binding Protein (LBP) – Biomarkers of Sepsis in Appendicular Peritonitis.....	444
<b>ALINA VIORICA IANCU, GABRIELA GURAU, CATERINA DUMITRU, LILIANA BAROIU, MARIANA CARMEN CHIFIRIUC, VERONICA LAZAR, MANUELA ARBUNE, GIGI COMAN, MIRUNA DRAGANESCU</b>	
The Role of Cytokine in the Diagnosis and Monitoring of Patients with Systemic Infections.....	455
<b>MARIUS IONITESCU, DINU VERMESAN, OANA SUCIU, BOGDAN DELEANU, AHMED ABU-AWWAD, VICTOR CRISTIAN DUMITRASCU, ROMEO NEGREA, DAN FRUJA</b>	
Association of Neutrophil to Lymphocyte Ratio with Disease Severity and Joint Effusion in Patients with Early Stage Knee Osteoarthritis.....	464
<b>MONICA STELUTA MARC, IOANA MIHAIELA CIUCA, LAVINIA MOLERIU, STELA IURCIUC, ANIKO MARIA MANEA, VLADIANA TURI, GEORGIANA DAMIAN, PAULA MARIAN, ESTERA BOERIU</b>	
Chemical Lipid Biomarkers in Children Exposed to Second Hand Smoking.....	469
<b>RADU RADULESCU, MARIA GREABU, ALEXANDRA TOTAN, MARINA MELESCANU IMRE, DANIELA MIRICESCU, ANDREEA DIDILESCU, RUXANDRA SFEATCU, COSMIN TOTAN</b>	
Diagnostic Role of Saliva in Oral Cancers.....	474

<b>BOGDAN SOROP, VLAD LAURENTIU DAVID, ALINA HEGHES, DELIA BERCEANU-VADUVA, LAVINIA BALAN, MARIA SOROP FLOREA, DORU ANASTASIU</b>	
Folates and Anti-folates – Chemical Perspectives, <i>in vitro</i> and <i>in ovo</i> Assessments.....	481
<b>ADRIAN STANCU, ALINA GHISE, MARIUS PENTEA, SORIN PASCA, LILIANA CARPINISAN, MIHAELA PETCU, JANOS DEGI, DELIA MIRA BERCEANU-VADUVA, DANA EMILIA VELIMIROVICI, ROMEO TEODOR CRISTINA, CAMELIA TULCAN</b>	
Immunohistochemical Diagnosis Method in Parvovirus.....	491
<b>MIHAELA PAULA TOADER, MADALINA MOCANU, ROXANA IRINA IANCU, STEFAN TOADER, VIRGIL BULIMAR, TATIANA TARANU</b>	
Nitroglycerin in Dermatology.....	497
<b>MONICA PESCARU, CRISTINA POTRE-ONCU, ADINA – IOANA BUCUR, BOGDAN NICULESCU, STELA IURCIUC, VIRGIL RADU ENATESCU, HORTENSIA IONITA, MADALINA VERONICA BORUGA, OVIDIU POTRE-ONCU</b>	
The Impact of Complex Treatment, Doxorubicin $C_{27}H_{29}NO_{11}$ , Bleomycin $C_{55}H_{84}N_{17}O_{21}S_3$ , Vinblastine $C_{46}H_{58}N_4O_9$ and Dacarbazine $C_6H_{10}N_6O$ Correlated with Haematological Parameters on Hodgkin's Lymphoma Survival Prognostic .....	504
<b>MARIA TOTAN, ELISABETA ANTONESCU, LAVINIA DUICA, CORINA ROMAN-FILIP, SINZIANA CALINA SILISTEANU</b>	
Study of a Standardized Plant Extract Used as an Anti-Inflammatory Drug to Reduce Joint Pain.....	513