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AGENȚIA ROMÂNĂ
DE ASIGURARE A
CALITĂȚII ÎN
INVĂȚĂMÎNTUL ÎNFERIOR

REINTEGRATION OF ROMANIAN SCIENTISTS FROM ABROAD FOR HIGHER EDUCATION IMPROVEMENT IN ROMANIA. CASE REPORT: AUREL VLAICU UNIVERSITY OF ARAD

Alina D. Zamfir, Florentina D. Munteanu, Lizica Mihuț



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AGENCIJA ROMÂNIA
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INVĂȚĂMÎNTUL SUPERIOR

Romanian “brain-drain” phenomenon

WHY DO ROMANIAN SCIENTISTS EMIGRATE?

- better opportunities for **professional development** abroad
- limited **research funding and technology** in Romania
- thorny process of **career advancement** often dependent on subjective factors
- inadequate **legislation**, norms and regulations
- unappealing **wages and social services**

WHY THE NEED FOR THEIR REPATRIATION AND APPROPRIATE REINTEGRATION?

- retrieval of the **original investment** made in their education
- benefit from their elevated **expertise**, international **experience** and **reputation** acquired abroad
- **dissemination of the knowledge** acquired out of the country and maintenance of the networks and connections from abroad, facilitating a continuous **knowledge exchange** in the benefit of our country

CASE REPORT: Aurel Vlaicu University of Arad, Romania

Within 2006-2009 period, six young scientists who have spent 7-10 years abroad, defined and refined their professional careers and/or taught in renowned universities from Western Europe, USA and Canada **were reintegrated in the Romanian higher education system at Aurel Vlaicu University of Arad.**

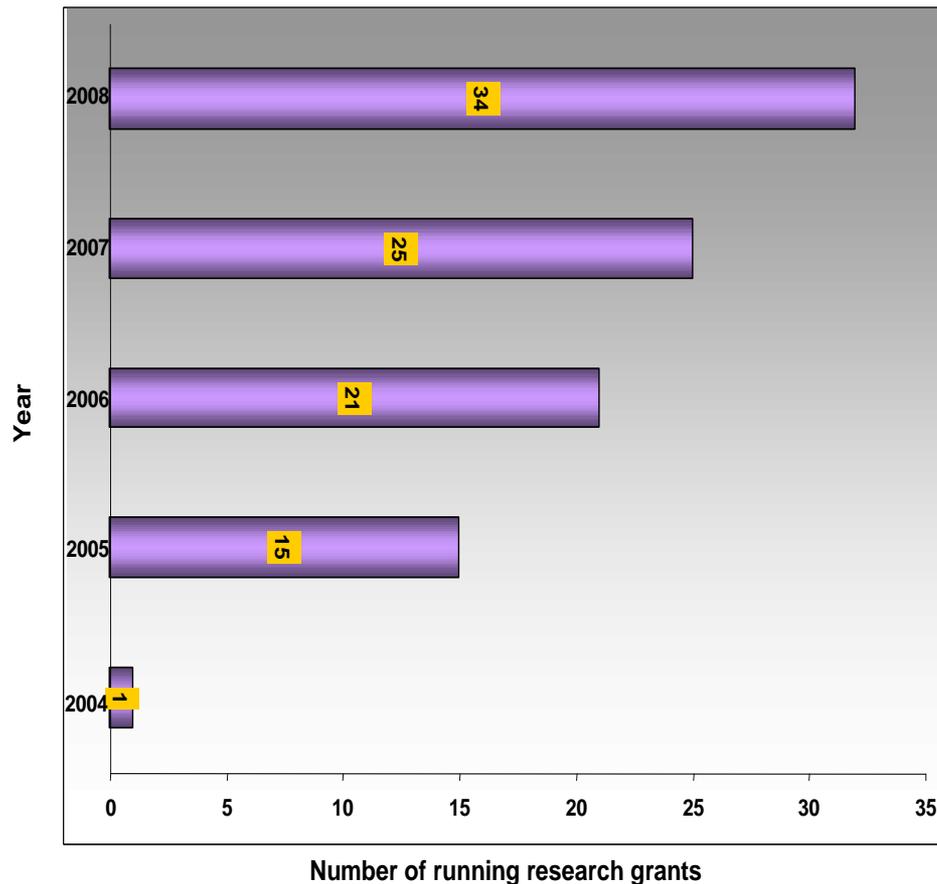


THE FOUR STEPS OF ACADEMIC REINTEGRATION

- ➔ **At first, the scientists were reintegrated on research or teaching positions that were equivalent to those they held at the universities from abroad;**
- ➔ **Further, they were provided conditions to perform in research and education at the level they did abroad, prior to their return home;**
- ➔ **In the third stage the six scientists were constantly encouraged and supported by all means to apply for research grants, constitute and lead their own and independent research groups;**
- ➔ **Finally, the scientists were supported to promote on academic track as soon as their accomplishments fulfilled the national criteria for advancement in career.**

The “pay back” at the institutional level

Evolution of the number of research grants at Aurel Vlaicu University of Arad within 2004-2008 period



- 2004**: the research relied on a single grant;
- 2008**: 34 national and international grants supported the research;
- 2008**: Prize for Research by the National Council of Scientific Research in Higher Education (CNCSIS).
- 2010**: Two international research prizes.

The “pay back” at the institutional level

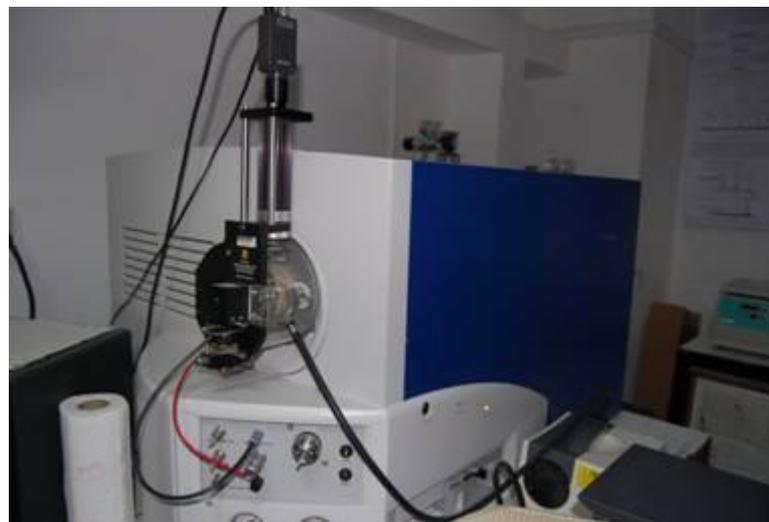
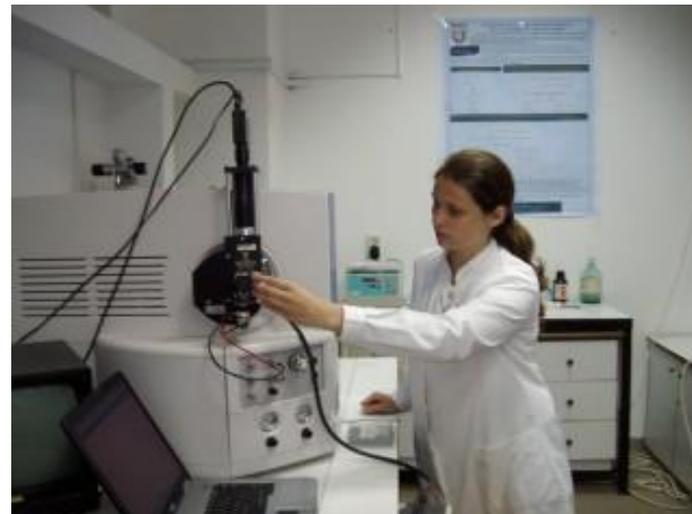
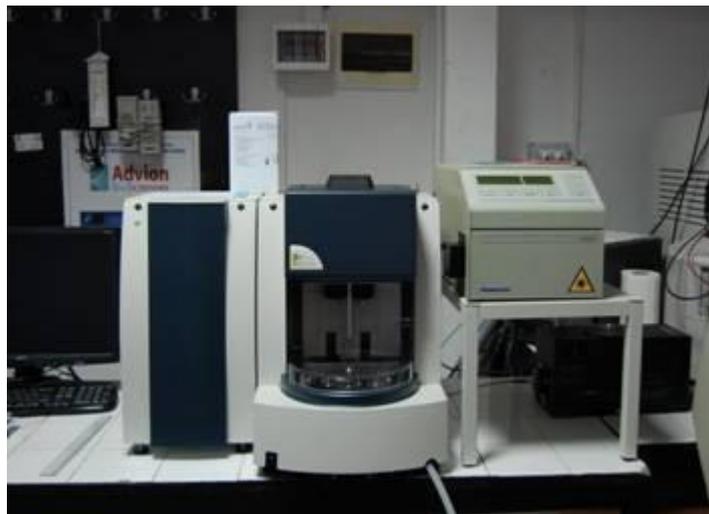
2009-2010

Research of Excellence Fields

Biotechnology

- Biological and Biomedical Mass Spectrometry
- Theoretical Physics
- Electrochemistry/Biosensors
- Advanced Textile Materials and Related Technologies
- Philology (graduate/doctoral school)
- Theology (graduate/doctoral school)







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DE ASIGURARE A
CALITĂȚII ÎN
ÎNVĂȚĂMÎNTUL ÎNFERIOR

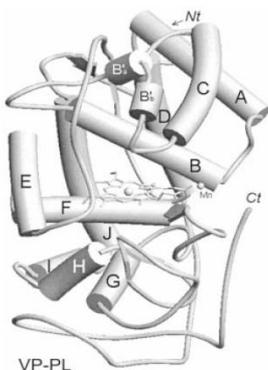
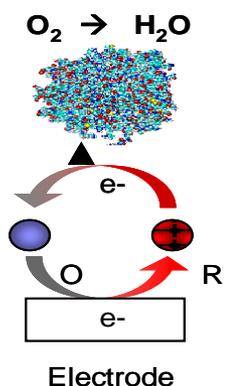
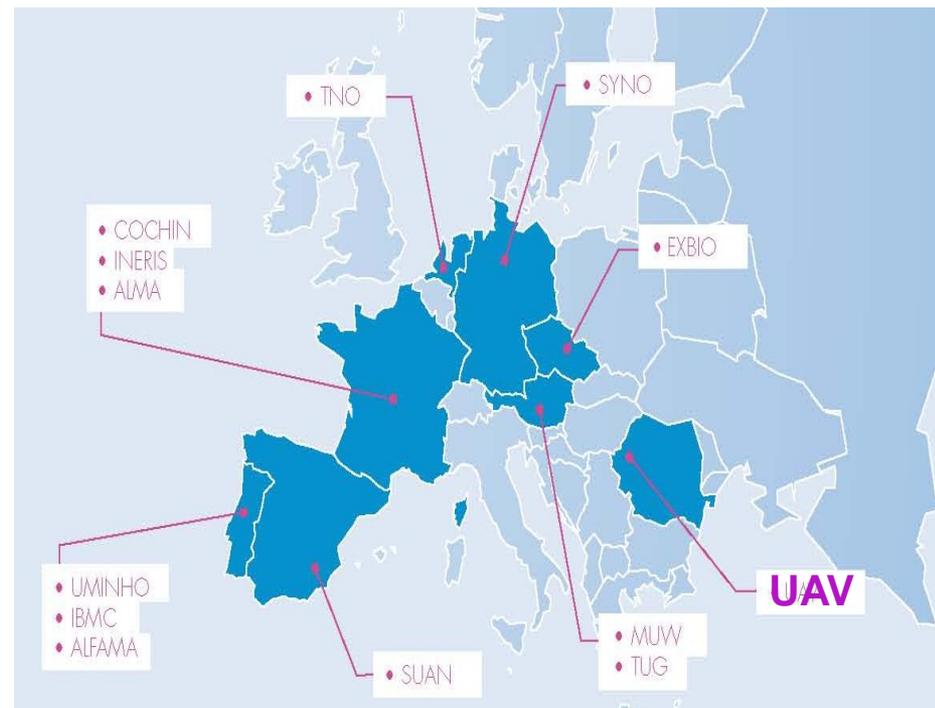
Research of Excellence Electrochemistry/Biosensors

Group Leader:

Prof. Dr. Florentina-Daniela MUNTEANU

PhD in Sweden & Postdoc in Portugal

9 years, research abroad, Reintegrated at Aurel Vlaicu University of Arad in 2005



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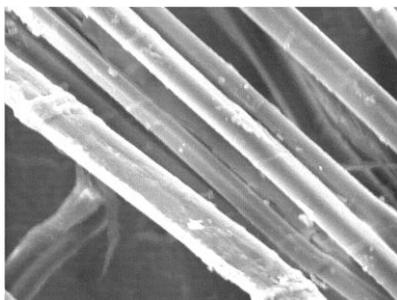
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AGENȚIA ROMÂNĂ
DE ASIGURARE A
CALITĂȚII ÎN
INVĂȚĂMÎNTUL ÎNFERIOR

Research of Excellence Advanced Textile Materials and Related Technologies

Group Leader:
Prof. Dr. Cecilia SÂRGHIE
Postdoc in Belgium
5 years, research abroad
Reintegrated at Aurel Vlaicu University of Arad in 2005



HV: 20.00 kV
View Field: 0.082 mm
Collection: 4/11/2008
Det: SE Detector

Microscope: TESLA B10500
Company: Filinvest SA Iasi
Magnification: 1500



ORGANISERS: UNIVERSITY AUREL VLAICU ARAD-ROMANIA, INSTITUTE OF NATURAL FIBRES PAULSCIORENA EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS - POLAND

CO-ORGANISERS: TECHNICAL UNIVERSITY GHI. ASACHI-IASI-ROMANIA, TEXTILES & LEATHER NATIONAL RESEARCH INSTITUTE-BUCHAREST-ROMANIA, NATIONAL CENTRE MANAGEMENT PROGRAMMES C.N.M.P.-BUCHAREST-ROMANIA

PROCEEDINGS OF THE 4th GLOBAL WORKSHOP (GENERAL CONSULTATION) OF THE FAO/ESCORENA EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS

INNOVATIVE TECHNOLOGIES FOR COMFORT

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AGENTIA ROMANA
DE ASIGURARE A
CALITĂȚII ÎN
INWATAMANTUL ÎN SERVICIU

Research of Excellence Biological and Biomedical Mass Spectrometry

Group Leader:

Prof. Dr. Alina-Diana ZAMFIR

PhD & Postdoc in Germany

Habilitation/Professorship in Germany

7 years, research and professorship abroad

Reintegrated at Aurel Vlaicu University of Arad in 2006



ROMANIAN SOCIETY FOR
MASS SPECTROMETRY

1st INTERNATIONAL CONFERENCE
OF THE ROMANIAN SOCIETY FOR MASS SPECTROMETRY

April 25-29, 2010

New Montana Hotel, Sinaia, ROMANIA

Chair: Alina D. Zamfir

Topics

Discovery of new biomolecules • Bioaffinity mass spectrometry • Proteomics & protein-structure modification • MS in immunology • MS in disease diagnostics & therapeutic lead structure discovery • New instrumental developments & hyphenation tools • Carbohydrates & glycolipids

Key-Speakers

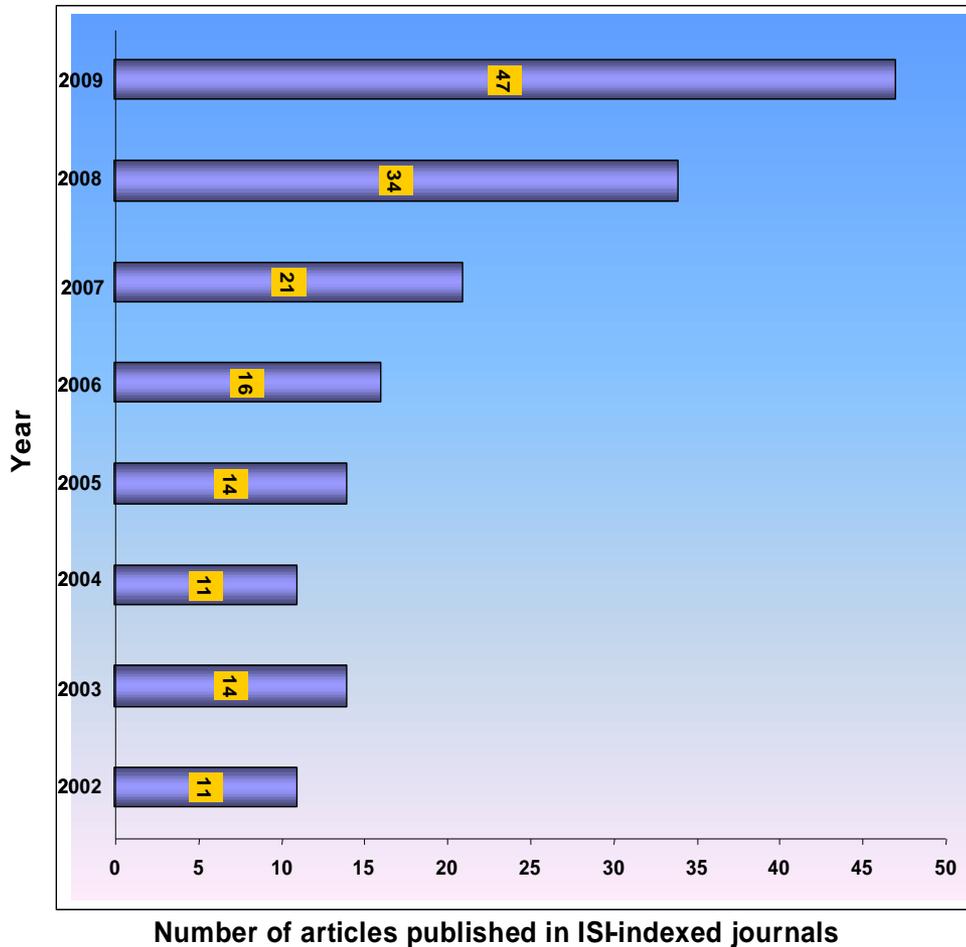
Michael Glocker, Proteome Center, Rostock
Michael Gross, Washington University St. Louis
Jürgen Grotemeyer, University of Kiel
Andrei Medvedovici, University of Bucharest
Irina Perdivara, NIEHS Research Triangle Park
Michael Przybylski, University of Konstanz
Andreas Rizzi, University of Vienna
Kenneth Tomer, NIEHS Research Triangle Park

Triinu Visnapuu, University of Tartu
Željka Vukelić, University of Zagreb
Shaun Bilsborough, Agilent Technologies, Stockport
Matthew Kennedy, Waters, Manchester
Marcus Macht, Bruker Daltonics, Bremen
Sorin Stanescu, Pro Analysis Systems, Bucharest
Andreas Wiesner, Advion BioSciences, Essex
Kate Zhang, Genzyme Boston



The “pay back” at the institutional level

Evolution of the number of articles published in ISI-indexed journals under the affiliation of *Aurel Vlaicu* University of Arad within 2002-2009 period



- 2004: 11 papers
- 2009: 47 papers
- 2010: Elsevier prize for highly cited papers affiliated to the university
- 2010: 2 authors in Ad-Astra Top 3 of their research field



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A DENŢIA ROMÂNIA
DE ASIGURARE A
CALŢĂŢII ÎN
INVAZIASANTULI, S.P. PERIOR

ISI-Class I Publications in 2009

Research Article

Received: 28 May 2009
(www.interscience.com) DOI 10.1002/jms.1625

Journal of MASS SPECTROMETRY

WILEY InterScience®
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Published online in Wiley InterScience®

●Top-down glycolipidomics: fragmentation analysis of ganglioside oligosaccharide core and ceramide moiety by chip-nanoelectrospray collision-induced dissociation MS²–MS⁶

Alina Serb,^{a,b#} Catalin Schiopu,^{a#} Corina Flangea^{a,b} Eugen Sisu^{b,d} and Alina D. Zamfir^{a,c*}

Impact factor: 3.21

Proteomics 2009, 8, 3435–3444
DOI 10.1002/pmic.200800440

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RESEARCH ARTICLE

Analysis of novel over- and under-sulfated glycosaminoglycan sequences by enzyme cleavage and multiple stage MS

Alina D. Zamfir^{1,2}, Corina Flangea^{2,3}, Eugen Sisu^{3,4}, Alina F. Serb^{2,3}, Nicolae Dinca¹, Peter Bruckner⁵ and Daniela G. Seidler⁵

¹Department of Chemistry and Biology, "Aurel Vlaicu" University of Arad, Arad, Romania
²Mass Spectrometry Laboratory, National Institute for Research and Development in Electrochemistry and Condensed Matter, Timișoara, Romania
³Department of Biochemistry, Timișoara, Romania
⁴Chemistry Institute of Romar
⁵Institute of Physiological Che

Impact factor: 6.02

Anal Bioanal Chem
DOI 10.1007/s00216-009-3188-8

Springer

ORIGINAL PAPER

Determination of ganglioside composition and structure in human brain hemangioma by chip-based nanoelectrospray ionization tandem mass spectrometry

Catalin Schiopu · Corina Flangea · Florina Capitan · Alina Serb · Željka Vukelić · Sveltana Kalanj-Bognar · Eugen Sisu · Michael Przybylski · Alina D. Zamfir

Impact factor: 3.42

Received: 3 July 2009 / Revised: 20 September 2009 / Accepted: 22 September 2009
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Anal Bioanal Chem
DOI 10.1007/s00216-009-3167-0

Springer

ORIGINAL PAPER

Determination of sulfation pattern in brain glycosaminoglycans by chip-based electrospray ionization ion trap mass spectrometry

Corina Flangea · Catalin Schiopu · Eugen Sisu · Alina Serb · Michael Przybylski · Daniela G. Seidler · Alina D. Zamfir

Impact factor: 3.42

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Published online in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/rcm

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RCM

Fully automated chip-based negative mode nanoelectrospray mass spectrometry of fructooligosaccharides produced by heterologously expressed levansucrase from *Pseudomonas syringae* pv. tomato DC3000

Triinu Visnapuu¹, Alina D. Zamfir^{2,3}, Cristina Mosoarca³, Michaela D. Stanescu² and Tiina Alamäe^{1*}

¹Institute of Molecular and Cell Biology, University of Tartu, Rila 23, 51010 Tartu, Estonia
²Department of Chemistry and Biology, "Aurel Vlaicu" University of Arad, Revoluției Blvd. 77, 310130 Arad, Romania
³Mass Spectrometry Laboratory, National Institute for Research and Development in Electrochemistry and Condensed Matter, P. Iulius Andronescu 1, 300224 Timișoara, Romania

Impact factor: 3.05



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INVĂȚĂMÎNTUL ȘI PERIOD

ISI-Class I and II Publications in 2009

Journal of Electroanalytical Chemistry 638 (2009) 33–36

Contents lists available at ScienceDirect

Journal of Electroanalytical Chemistry

Journal homepage: www.elsevier.com/locate/jelechem

Bioelectrochemical investigations of aryl-alcohol oxidase from *Pleurotus eryngii*

Florentina-Daniela Munteanu^a, Patricia Ferreira^b, Francisco J. Ruiz-Dueñas^b, Angel T. Martínez^a, Arturo Caraco-Pardo^{a,*}

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Keywords:
Aryl alcohol oxidase
Bioelectrocatalysis
Graphite electrode
Kinetics
Nucleic potential

ABSTRACT

Aryl-alcohol oxidase (AAO) electrochemistry studies, using graphite-modified electrodes, are presented for the first time herein. The increase in current upon injection of the analyzed substrate was shown to be approximately Michaelis-Menten type dependence. The catalytic kinetic constants were used to characterize the native (non-modified) recombinant AAO expressed in *Escherichia coli*, as well as the native enzyme and the TBA11 and TBA16 variants expressed in *Saccharomyces cerevisiae*. Results from cyclic voltammetry experiments conducted with the enzymes adsorbed on graphite electrodes or with the enzymes in solution using glassy carbon electrode as working electrode give indications on the redox potential of these enzymes. © 2009 Elsevier B.V. All rights reserved.

Mod.Phys.Lett.

Boson mass spectrum in $SU(4)_L \otimes U(1)_Y$ model with exotic electric charges

ADRIAN PALCU

Faculty of Exact Sciences - "Aurel Vlaicu" University Arad, Str. Elena Drăgoi 2, Arad - 310330, Romania

Abstract

The boson mass spectrum of the electro-weak $SU(4)_L \otimes U(1)_Y$ model with exotic electric charges is investigated by using the algebraical approach supplied by the method of solving gauge models with high symmetries. Our approach predicts for the boson sector a one-parameter mass scale to be tuned in order to match the data obtained at LHC, LEP, CDF.

PACS numbers: 12.10.Dm; 12.60.Fr; 12.60.Cn.

Key words: 3-4-1 gauge models, boson mass spectrum, neutral currents

Electro-weak $SU(4)_L \otimes U(1)_Y$ models without exotic electric charges

ADRIAN PALCU

Faculty of Exact Sciences - "Aurel Vlaicu" University Arad, Str. Elena Drăgoi 2, Arad - 310330, Romania

Abstract

For the particular class of $SU(4)_L \otimes U(1)_Y$ electro-weak models without exotic electric charges, some plausible phenomenological predictions - such as the boson mass spectrum and charges of all the fermions involved therein - are made by using the algebraical approach of the exactly solving method for gauge models with high symmetries. Along with the one-parameter resulting mass scale (to be confirmed at TeV scale in LHC, LEP, CDF and other high energy experiments) our approach predicts the exact expressions of the charges (both electric and neutral) in the fermion sector, while all the Standard Model phenomenology is naturally recovered.

PACS numbers: 12.10.Dm; 12.60.Fr; 12.60.Cn.

Key words: 3-4-1 gauge models, boson mass spectrum

Mod.Phys.Lett.

THE ELECTRIC CHARGE ASSIGNMENT IN $SU(4)_L \otimes U(1)_Y$ GAUGE MODELS

ADRIAN PALCU

Faculty of Exact Sciences - "Aurel Vlaicu" University Arad, Str. Elena Drăgoi 2, Arad - 310330, Romania

Abstract

In this brief report, apart from the usual approach, we discriminate among models in the class of $SU(4)_L \otimes U(1)_Y$ electro-weak gauge models by just setting the vectors in the method of the exactly solving gauge models with high symmetries. We prove that the method itself naturally predicts the correct assignment of the electric charge spectrum along with the relation between the gauge couplings of the groups involved therein for each particular model in this class.

PACS numbers: 12.10.Dm; 12.60.Fr; 12.60.Cn.

Key words: 3-4-1 gauge models, electric charge assignment

Neutral currents in a $SU(4)_L \otimes U(1)_Y$ gauge model with exotic electric charges

ADRIAN PALCU

Faculty of Exact Sciences - "Aurel Vlaicu" University Arad, Str. Elena Drăgoi 2, Arad - 310330, Romania

Abstract

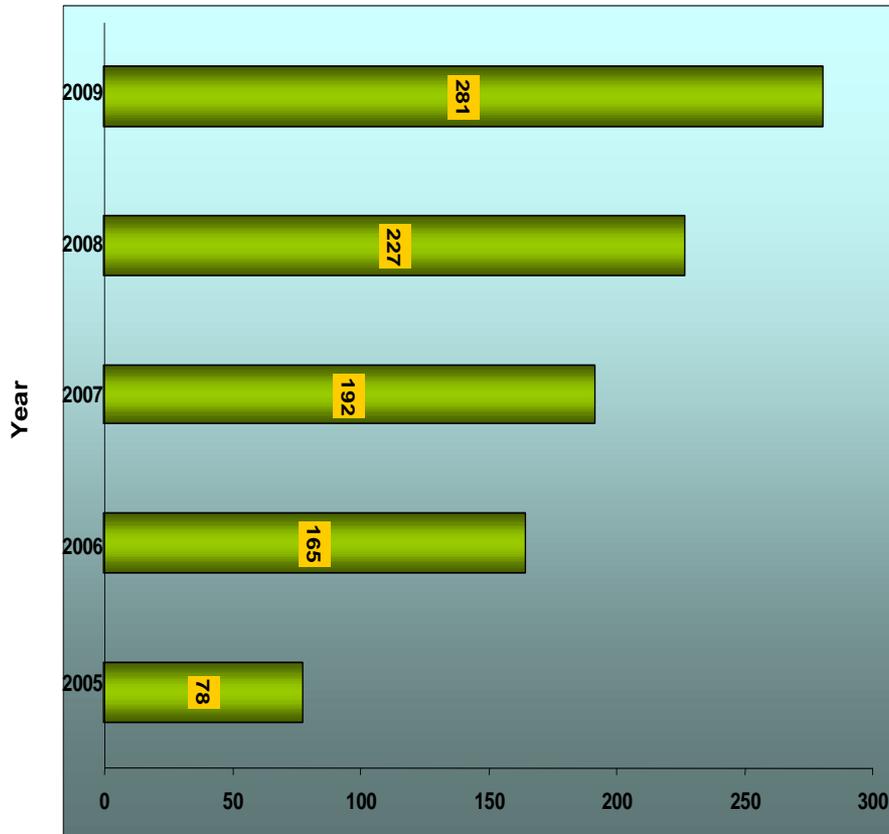
The weak currents with respect to the diagonal neutral bosons Z, Z' , and Z'' of a specific $SU(4)_L \otimes U(1)_Y$ gauge model are computed in detail for all the fermion families involved therein. Our algebraical approach, which is based on the general method of solving gauge models with high symmetries proposed several years ago by Cotescu, recovers in a non-trivial way all the Standard Model values for current couplings of the traditional leptons and quarks, and predicts plausible values for those of the exotic fermions in the model.

PACS numbers: 12.15.Mm; 12.60.Cn; 12.60.Fr.

Key words: 3-4-1 gauge models, neutral currents

The “pay back” at the institutional level

Evolution of the number of papers presented at international conferences under the affiliation of *Aurel Vlaicu* University of Arad within 2005-2009 period



Number of papers presented at international conferences

- 2005**: 78 presentations
- 2009**: 281 presentations
- most of these presentations were given as either contributed oral or invited plenary/keynote lectures at conferences held in: USA, Canada, Germany, France, UK, Austria, Portugal, Belgium, Italy, Sweden, Norway, Poland, Netherlands, Croatia, Serbia, Hungary, Russia, Ukraine and Israel.

CONCLUSIONS

- Within 2006-2009, at Aurel Vlaicu University of Arad, **six Romanian scientists** who have carried out a long-term continuous research stay abroad could be **successfully reintegrated** in the Romanian higher education system, which **essentially contributed to the increase of university accomplishments** and its national and international visibility.
- The results of this experiment substantiate once more that **attraction of Romanian scientists from abroad is one of the solutions** leading to the improvement and development of higher education system in Romania.

ACKNOWLEDGEMENTS

We are grateful to **Prof. Dr. Dorin Herlo**, Department of Academic Staff Training at *Aurel Vlaicu University of Arad*, for his commitment to this project and valuable help provided.