

CURRICULUM VITAE



PERSONAL INFORMATION

Name Surname

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Nationality

ABRUDEANU Mărioara

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Romanian

RESEARCH FIELDS

Materials used in nuclear energy. Zirconia alloys: evolution of microstructure and composition on overheating, mechanical behavior, evolution of thermal diffusivity with temperature, duration of overheating, thermal shock and thermal fatigue. Behavior of nuclear fuel in humid air at high temperatures. Behavior at tribocorrosion of some model alloys. Research on ODS type alloys, susceptible for use in generation IV reactors

Al-based alloys: the influence of artificial aging on structural transformations and corrosion behavior

Surface layers: performed by chemical deposition, plasma deposition and electrolytic plasma deposition, laser deposition and MOCVD

Obtaining using solar energy of oxide nanomaterials, pure and doped

Materials with shape memory: elaboration, characterization, mechanical dissipation at transformation, the influence of thermal shocks and thermal fatigue in the appearance of "amnesia"

Archaeological materials: characterization by techniques specific to materials engineering

EDUCATION AND TRAINING

1967-1972- Polytechnic Institute București, Faculty of Metallurgy

1991- Doctor's Degree in the fundamental domain Engineering Sciences – Materials Science and Engineering

December 1991 - June 1992- Postdoctoral stage, grant of French Government at Institut National Polytechnique de Lorraine, Université Nancy I, Ecole des Mines de Nancy, Laboratoire de Science et Génie des Matériaux Métalliques: "Influence de l'oxydation à haute température sur les propriétés thermophysiques de l'alliage zircaloy-4".

May 1992 Continuous Learning stage National Scientific Research Center of France (CNRS) - *Advanced certificate in "Analysis Techniques for Surface, Interfaces and Thin Layers"*.

July-August 1992 postdoctoral stage, grant of French Government, *Université Paris-Nord, Laboratoire d'Ingénierie des Matériaux et Hautes Pressions* : , *Corrosion de l'alliage Zy-4 sous air humide*"

November-December 1992 – Visiting researcher at National Scientific Research Center of France (CNRS) - *Institut des Matériaux, University of Paris - Sud Orsay*; *"Large surface superficial strata developed on Fe-Cr-Al as metallic support for a catalytic filter"*.

January-March 1994 – research stage in the European programme PECO - CE
Institut National Polytechnique de Toulouse, Ecole Nationale Supérieure de Chimie,
Laboratoire de Matériaux en couches minces „Chemical deposits as vanadium
carbonitration vapors, on steel support, starting from organometallic precursors".

1996- 2002-University Wolverhpton, Academy Orléans – Tours, Ecole Centrale de
Paris – Laboratory of Physical chemistry of Solides, CESI Paris Ile de France, Odense
TS, IAW Aachen, Universidad Autonoma Barcelona, CNRS –France – Solar Furnace
Odeillo Font Romeu

Continous Learning, international collaboration, research in the domain nanomaterials-
nanotechnologies.

WORK EXPERIENCE INDUSTRY

Dacia Pitesti Plant-engineer
Chief Metallurgist Office
Trainee engineer –Process engineer, Designing engineer.

DIDACTIC ACTIVITY

Higher Education - University of Pitești
September 1975- March 1993Assistant lecturer, Works Coordinator
1993-1997 Technology and Management Chair- Associate professor
1997- Peofesor - University of Pitesti
2000 - PhD adviser in the domain Materials Engineering
Teaching courses : Materials Science, Materials Technology, Corrosion and
Anticorrosion Protection
Initiator and coordinator of The Master programme in French language teaching
„Science and Technology of Materials”; initiated in 1995, developed in a partnership
with 6 universities and French grandes écoles, research partners: CNRS Laboratory
Promes Four Solaire Odeillo and the Institute of Materials Science Barcelona Since
2004 the graduates of the Master programme are awarded a double diploma – Research
Master diploma from the Polytechnic National Institute of Toulouse and from the
Univesity of Pitesti

Coordinator of the French learning module „ Corrosion et protection contre la
corrosion” developed for the engineering specialities , in collaboration with Ecole
Centrale Paris

March –May 1997 - Visiting Professor-- Institut National Polytechnique de Toulouse,
Ecole Nationale Supérieure de Chimie- Materials in Thin Layers

2000-2005- Visiting Professor-- *2 months a year*- National Institute of Applied
Sciences from Lyon, Laboratory of Industrial Physics and Chemistry - Corrosion and
Anticorrosion Protection

MAIN ACTIVITIES AND RESPONSIBILITIES

- Member in The Research Master Commission Matériaux of INP Toulouse, 2005-
- Coordinator of Initial and Continuous Formation European projects and for international collaboration development 1994-2019.
- Managing Director of International Relations University of Pitești, 1997-2000;
- Founder of the Continuous Formation Department - University of Pitești, 2002;;
- Vice-rector for Scientific Research activities, international relations and continuous formation - University of Pitești, 2000-2004;
- President of Scientific Council - University of Pitești, 2000-2004;
- Collaboration with BECO –AUF for the founding of University of Pitesti Center for Academic Success, 2014;
- Vice-rector for Research and Competitivity 2012-2015
- President of University Foundation Pitești, 1999.-2015
- Member of CNCISIS Council 2003-2008
- Corresponding Member of The Academy of Technical Sciences from Romania, since 2005.
- Member of The Romanian Council for the History and Philosophy of Science and Technology, Romanian Academy, since 2012
- Member of The National Council for Attestation of Academic Titles, Diplomas and Certificates - Materials Engineering Commission, 2011-2016,
- Member in the international pilot-committee of the francophone project for young leaders formation, Cancun, Mexic, 2014
- Member of Romanian Alliance for Education in Engineering-president Arges Branch, since 2015
- President of DoxDomia Association, since 2015-

HONOURS AND AWARDS

- Award for research of CNCISIS Romania, 2008
- Distinction „Palmes académiques”- granted by National Assembly of France on the 25-th of July 1996.

PERSONAL SKILLS MANAGERIAL SKILLS

Initiative, communication, determination
Organization, management and evaluation capacities

TECHNICAL SKILLS

Technical expert in the domain of materials for state administration, since 1981
Expert evaluator national research programmes
Continuous formation trainer.

FOREIGN LANGUAGES

FRENCH

Reading :Very well, *Writing*; Very well, *Speaking*; Very well

RUSSIAN

Reading :Satisfactory, *Writing* : Satisfactory, *Speaking* : Satisfactory

ENGLISH

Reading :Satisfactory, *Writing* : Satisfactory, *Speaking* : Satisfactory

LIST OF PUBLICATIONS

Selected Books in Central Publishing Houses :

- **Materiale-compozitie, microstructura, proprietati**, Marioara Abrudeanu, Adriana-Gabriela Plăiașu, Maria-Magdalena Dicu, 2015, ISBN 978-973-47-1827-6, Editura Paralela 45,
- **Matériaux**, dictionar francez-român, român francez Clara Abrudeanu, Henri Zingle, M Abrudeanu, 2014 : Editura Paralela 45, ISBN 978-973-47-1821-4,.
- **Materiale** Marioara Abrudeanu, Ed Paralela 45, 2011, ISBN 978-973-47-1124-6,
- **Double evolution-sistem pentru managementul calitatii in formarea personalului C** Pereira,T Evirgen, M Abrudeanu, T Inclanzan,F Fericeanu, M Petermandl, M Le May, I Lifka, 200,., Editura Tehnica, Bucuresti, ISBN 973-31-2007-3.
- **Tehnologia informatiei si comunicarii** N. Bizon, M Abrudeanu, T Macarie, D Chirlesan,G Chilesan,E Neagu, 2001, Editura Tehnica, 2002, Bucuresti, ISBN 973-31-2062-6.
- **Sinteza pulberilor ceramice in medii ultradisperse**, Marioara Abrudeanu, Roxana Piticescu, Radu Piticescu,2000, Editura Tehnica, Bucuresti, ISBN 973-31-1381-6
- **Efectul radiatiilor asupra materialelor si componentelor electronice** ,Ioan Lita, Marioara Abrudeanu, 2000, Editura Tehnica, Bucuresti, ISBN 973-31-1495-2.
- **Știința materialelor**, Marioara Abrudeanu,1999 , Editura Tehnica, Bucuresti, ISBN 973-31-1383-2

Selected Articles

- **The influence of thermal shocks on the thermophysical properties of the zircaloy-4**, D C Anghel, AE Rosu, G Neacsu, IA Popa, M Branzei, V Rizea, CM Ducu, MM Dicu, AD Rizea, E Ungureanu, M Abrudeanu :, Revista de chimie , Bucharest, 70, .2, p 575-577, 2019
- **Investigation of the fracture mechanics properties of small tubes from Oxide Dispersion Strengthened steels**, , Nițu, V. Radu, , M. Abrudeanu, *Revista de chimie* ISSN 0034-7752, vol. 69, nr. 12/2018 (accept de publicare nr.51/18.04.2018)
- **The influence of the high temperatures thermal shocks on the microstructure and harness of zircaloy-4 alloy**,, I.Popa, A. E. Rosu, G. Neacsu, D. C. Anghel, V. Rizea, M Branzei, CM. Ducu, M.M. Dicu, M. Abrudeanu *Revista de chimie*, 69(7), 1655-1660, july, 2018
- **Chemical redistribution and microstructural evolution of ODS Fe-Cr powders during mechanical alloying**, M. Stanciulescu, M. Abrudeanu, C. Ducu, A.G.Plaiasu, 2018., *Revista de Chimie* (Bucuresti), 69, nr.2,p.495-498
- **The study of the mechanical properties of small tubes made from Oxide Dispersion Strengthened steel by using the Ring Tension Tests**, Al. Nițu, V. Radu, E. Ungureanu, M. Abrudeanu,2018, *Revista de chimie* ISSN 0034-7752, vol. 69, nr. 11/2018 , 3033.-3037
- **Investigation of the fracture mechanics properties of small tubes from Oxide Dispersion Strengthened steels**, Al. Nițu, V. Radu, E. Ungureanu, M. Abrudeanu, 2018,*Revista de chimie* ISSN 0034-7752, vol. 69, nr. 12/2018,3533.-3537.
- **Dissolution Behaviour of Alloyng Elements Into Vanadium Matrix During Mechanical Milling**, Madalina Stanciulescu, Mărioara Abrudeanu, Andrei Galatanu, Paula CARLAN Maria Mihalache, *Rev.Chim.(Bucharest)* 68 No. 5 2017, pag 1109-1113
- **Influence of CeO₂ Thickness Layer Deposited on the 945A Steel, Substrate Concerning the Corrosion Process**, E S Barca, L C Trinca, M Filipescu, M DINESCU ,A-G Plaiasu, M Abrudeanu, R Leata , 2016,: , *REV.CHIM.(Bucharest)* 67 No., f.i 0.956
- **Transport properties of Al or Cr-doped nickel oxide relevant to the thermal oxidation of dilute Ni-Al and Ni-Cr alloys**, N. Halem, Z.Halem, M. Abrudeanu, C.Petot,G. Petot-Ervas, 2016, , *Solid State Ionics*, 297 , 13-19, banda galbena UEFISCDI, f.i. 2.561.
- **Piramid growth of ceria nanostructures by pulsed laser deposition**, ES Bârca; M Filipescu, C Luculescu, B Birjega, M Dumitru, C Néstor, C Stanciu, M Abrudeanu, C. Munteanu, M Dinescu, 2016, *Applied Surface Science*, 363 245-251, f.i. 2.711

- **The behavior of ZrO₂/20%Y₂O₃ and Al₂O₃ coatings deposited on aluminum alloys at high temperature regime**, G.L. Pintilei a,b,*; V.I. Crismarub, M. Abrudeanu, C. Munteanu, E.R. Baci, B. Istrate B.N. Basescu, 2015 ;, Applied Surface Science, 352, 178–183
- **The influence of ZrO₂/20%Y₂O₃ and Al₂O₃ deposited coatings to the behavior of an aluminum alloy subjected to mechanical shock**, 2015 G.L. Pintilei, V.I. Crismarub, M. Abrudeanu, C. Munteanu, D. Luca, B. Istrate, Applied Surface Science, 352, 169–177
- **Fuel Pellets Phase Composition Evolution During Steam or Air Oxidation**, I. Dumitrescu, M. Mihalache, A. Dinu, Meleg, T. Ohai, D. Abrudeanu, M., 2015, REVISTA DE CHIMIE Volume: 66 Issue: 3, 316-319
- **Characterization of the mechanical dissipation in shape-memory alloys during stress-induced phase transformation**, Bubulinca, C.; Balandraud, X.; Grediac, M.; S. Stanciu, Abrudeanu M, 2014, Journal of materials science volume: 49 issue: 2, 701-709,
- **Study of the influence of the artificial ageing temperature on the AA2024 alloy microstructure**, Radutoiu N., Alexis J., Lacroix L., Abrudeanu M., Petit J.A., 2013 Key Engineering Materials, Volume: 550, 115-125,
- **The Evolution of the Microstructure of AA2024 Aluminum Alloys as a Function of the Artificial Ageing Temperature** Radutoiu N., Lacroix L., Joel A., Abrudeanu M., Petit J.A., Rizea V., Vulpe S., 2013, REVISTA DE CHIMIE, Volume: 63, Issue: 12, 1257-1260; [cited 12](#)
- **Effect of the Over-ageing Treatment on the Mechanical Properties of AA2024 Aluminum Alloy**, Radutoiu N., Alexis J., Lacroix L., Petit J.A., Abrudeanu M., Rizea V., Vulpe S., 2012, Revista de Chimie, Volume: 63, Issue: 10, 1042-1045, [cited 12](#)
- **Preparation of ceramic coatings on titanium formed by micro-arc oxidation method for biomedical application**, Dicu M.M., Abrudeanu M., Moga S., Negrea D., Andrei V., Ducu C. 2012, Journal of Optoelectronics and Advanced Materials, Volume: 14, Issue: 1-2, 125-130,
- **Corrosion behaviour of the "sandwich" material AlSi/AlMn/AlSi in contact with an inhibited cooling liquid**, Florina Constantin, Jean Pierre Millet, Mărioara Abrudeanu, Claudiu Constantin Ionescu, 2011, Revista de Chimie, ISSN 0034-7752, 62, 12, 1157-1161.
- **A comparative study on tribocorrosion of two Ni - Cr model alloys in a solution of boric acid and lithium hydroxide**, Claudiu Constantin Ionescu, Pierre Ponthiaux, Mărioara Abrudeanu, François Wenger, Florina Constantin, 2011, Revista de Chimie, ISSN 0034-7752, 62, 11, 1077-1084.
- **Effect of normal force on tribocorrosion behaviour of Ni - 30Cr model alloy in LiOH - H₃BO₃ solution**, Claudiu Constantin Ionescu, Mărioara Abrudeanu, Pierre Ponthiaux, François Wenger, 2011, Revue Roumaine de Chimie, ISSN 0035-3930, 56, 9, 907-915,
- **Synthesis and properties of the porous titania coatings formed on titanium by plasma electrolytic oxidation for biomedical application** M Dicu, A Matei, M Abrudeanu, C Ducu, 2011; Journal of Optoelectronics and Advanced Materials, vol.13, nr.3, 318-325
- **Al effect in transport properties of nickel oxide and its relevance to the oxidation of nickel**, N. Halem, M. Abrudeanu and G. Petot-Ervas, mai 2011, Materials Science and Engineering: B, ELSEVIER, ScienceDirect, 176, 13, 1002-1009; [cited 14](#)
- **The heat treatment and P effect on Ni-P/SiC coatings hardness** MM Pasare, MI Petrescu, M Abrudeanu, 2008, Rev. Roum. Chim, 53(7), p.563-567, ISSN 00347752, FI.0.262
- **Stress Corrosion Cracking Zircaloy-4 Conditions in Iodine Containing Environments**, Alice Dinu, M. Abrudeanu, 2007; Revista de Chimie, Nr. 8, p.751-754, ISSN 00347752
- **Transport properties of yttrium-doped zirconia – Influence of kinetic demixing** A.Rizea, G. Petot-Ervas, C. Petot, M. Abrudeanu, M.J. Graham, G.I. Sproule, 2007; Solid State Ionics 177, issue 39-40, 3417-3424, [cited 10](#)
- **Characterisation and properties of ZnO based nanopowders prepared by solar physical vapor deposition (SPVD)** J. Kouam, T. Ait-Ahcene, A.G. Plaiasu, M. Abrudeanu, A. Motoc, E. Beche, C. Monty, 2007, Solar Energy, 2007, on line www.sciencedirect.com, Solid State Ionics 177/ 3417-3424 [cited 27](#)
- **Geometrical features of plasma sprayed deposits and their characterization methods**, Trifa, I., G. Montavon, Ch. Coddet, C. Nardin, M. Abrudeanu, 2005 Materials Characterization, Vol. 54, 157-175, Elsevier, [cited 14](#)
- **Influence de l'oxydation et de l'état structural sur les propriétés thermo-physiques d'un alliage a base de zirconium** P. Archambault, M. Abrudeanu, 1993, Journal of Nuclear Materials, 200, 2, 162-168.

Relevant participation in international events

- **General approach of matter transport processes at elevated temperature during the growth of oxide scales on alloys. Oxidation of CeO₂-coated Ni**, Z.Halem, N.Mahiouz, N.Halem, M.Abrudeanu, G.Petot-Ervas: Eurocorr 2017, Praga, [International Corrosion Committee diploma for best poster](#)
- **Corrélation microstructures- propriétés pour l'alliage zircaloy 4**, 1995, International Conference *Zr-95, Saclay*, France, ,303-312
- **L'influence de l'oxydation à haute température sur la diffusivité thermique de l'alliage Zy-4**, M Abrudeanu ,P Archambault,1994, [plenary conference, 9e, Congrès International du Traitement Thermique et de l'Ingénierie des Surfaces](#), Nice,, 87-93.
- **Microstructure and electron microprobe study of oxide layers obtained on zircaloy-4 by oxidation at high temperature**, M Abrudeanu, P.Archambault, G Petot -Ervas, N Petrescu, M. Petrescu, 1993, Microscopy of Oxidation 2, Proceeding of [the Second International Conference Held at Selwyn College University of Cambridge](#), p.387-395, IM- ISBN 0901 716502..
- **Diffusion coefficients of oxygen in zirconium alloys during dry oxidation**, M Abrudeanu, N Petrescu, 1991, , [International Conference of Diffusion and Defects in Solids DD91](#), Academy of Sciences, Moscou- URSS,, 75, 84.

Research Projects in International Programmes :

- **Development of zirconium oxide nanomaterials for applications using electrical and mechanical properties**, Contract NATO, 1992, cu ref.SFP 974-054
- **Vanadium carbonitrides layers on a carbon steel support by chemical deposition in the vapor phase starting from organometallic precursors..** Contract PECO cu nr 8087/Ref. ERB 3510 PI 20279, 1994,
- **ZnO based Nanostructured Coatings and Thin films- NANOCOAT** , FP-6Acces la resurse *SOLFACE, 2006, Solar Odeillo*"
- **Synthesis and Characterization of Nanomaterials for Coatings**, SYCANCO, F P7 Specific Programme 'Capacities: Project reference 228296, -
- **Nanopowders Elaboration and sintering of CeO₂-Gd doped nanopowders**, NESGED, FP7 Specific Programme - *Acces aux ressources* - High Flux Solar Facilities for Europe, 2012
- **Synthesis and characterisatio of nanostructured cooper and manganese oxide powders for thin film elaborations**, NANOCOMAFI: FP7 Specific Programme 'Capacities' - Optimising the use and development of research infrastructures, Project reference: 228296, 2013
- **Disulphide of molybdenum nanostructure synthesis and characterisation for obtain greases with hight adhesion to metals – NANODISMOLY**, FP7 Specific Programme 'Capacities' - Optimising the use and development of research infrastructures: -2014 under SFERA (Solar facilities for the European research area), 2014
- **Influence of structural transformations performed by thermal shock on thermal diffusivity alloy zircaloy-4**, TERMOSHOCZY, FP7 Specific Programme 'Capacities' - Optimising the use and development of research infrastructures, 2015
- **Study of variation of the mechanical properties of superalloys Inconel 718 and Rene 41 under thermal shook**, TERMOINCORENE, FP7 Specific Programme 'Capacitie' - P1601300180, SFERA 2016
- **Thermal Shock and Fatigue on Shape memory alloy from CuZnAl and CuAlNi systems –** FP7 Programme 'Capacities HTSMAs,Acronym: TERMOMEM, SFERA 2017 :
- **Experimental route of fabrication for Fe-Cr oxide dispersion strengthened steel used in Generation IV nuclear reactors construction**,FECRODS- Orizont 2020 SURPF2001300034FECRODS, 2020-2023

PhD theses. Domain: Materials Engineering

Luminita Elena Din Stirbu : **Influence des inhibiteurs dans le liquide de refroidissement utilisé dans l'automobile sur le comportement a la corrosion de l'alliage AlMn₂**, French -Romanian Coordination, with Institut National de Sciences Appliquées Lyon- Pr. Jean-Pierre Millet, 2006.

Maria Minodora Brânzan Pasare : **Studies and research on the structure and properties of Ni-P / SiC composite layers on metal support**, 2006

Alice Daniela Dinu : **Research on the cracking corrosion under load of some materials used in nuclear energy**, 2008

Gabriela Adriana Schiopu Plaiasu **Research on the elaboration and characterization of oxide nanomaterials with special properties**, 2008

Florina Simescu Lazar: **Élaboration des revêtements de phosphates de zinc sur armature à béton. Étude de leur comportement à la corrosion en milieu neutre et alcalin**, French -Romanian Coordination, /with Institut National de Sciences Appliquées Lyon- Pr Hassan Idrissi, 2008

Mihaela Teaca: **Caractérisation expérimentale et modélisation de la déformation plastique des tôles métalliques**, French -Romanian Coordination, with Université de Metz – Pr. Gerard Ferron; 2009

Florina Constantin: **Etude de l'efficacité d'inhibiteur de corrosion utilisés dans les liquides de refroidissement**, French -Romanian Coordination, /with Institut National de Sciences Appliquées Lyon – Pr.. Jean-Pierre Millet, 2011

Tiberiu Meleg: **Corrosion of nuclear alloys in severe accident conditions**, 2011

Claudiu Ionescu : **Caractérisation des mécanismes d'usure par tribocorrosion d'alliages utilisés dans le domaine nucléaire**, French -Romanian Coordination /with Ecole Centrale Paris –Pr. Pierre Pontiaux 2011

Constantin Bubulinca: **Application of infrared thermography to determine the mechanical dissipation of alloys with Cu-Zn-Al shape memory**, French –Romanian, with Université Blaise Pascale Clermont Ferrand- Pr.. Michel Grediac 2013

Sanda Cristina Vulpe :, **Research on the thermomechanical behavior of high nickel alloys for use in generation IV reactors**, 2013

Nicoleta Radutoiu **Influence des traitements thermiques sur le comportement en corrosion a l'échelle locale de l'alliage d'aluminium en AW 2024**, French -Romanian Coordination, with Institut Polytechnique de Toulouse, ENI Tarbes Pr. Jacques Alain Petit, 2013

Iulia Maria Dumitrescu : **Contributions to the study of the behavior of the nuclear fuel matrix in severe accident conditions**, 2018

Alexandru Ionut NITU, **Contributions regarding the study of some failure mechanisms encountered in the structural materials used in nuclear energy**, 2019

Laura Teodorescu : **Caractérisation des bines du patrimoine culturel matériel par des techniques spécifiques à l'ingénierie des matériaux**, French -Romanian Coordination , /with Université Nordeaux Montaigne- Pr.Rémy Chapoulie, under development

M Abrudeanu

