

## PERSONAL INFORMATION



## Cristian P. LUNGU

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Sex Male | Date of birth 16/12/1950 | Nationality Romanian

## WORK EXPERIENCE

Dates	1978-present:
Occupation or position held	Physicst:1978-1984, Scientific Researcher:1984, CS III:1990, CSII 1996, CS I: 2005Senior Researcher First Grade, CS I, Scientific Director of NILPRP (April 2015, March 2016)
Main activities and responsibilities	Research and Development in the field of Thin film depositions, studies and applications of the low temperature plasmas; Head of the Elementary Process in Plasma and Applications Group, Project Director of over 5PNI , 6 PN II projects and 12 FP6-FP7 EURATOM projects
Name and address of employer	National Institute for Laser, Plasma and Radiation Physics INFLPR, Atomistilor Street No 409, Magurele, 077125, Ilfov, Romania
Type of business or sector	Research
Dates	2000-2003
Occupation or position held	Scientific Researcher under work contract
Main activities and responsibilities	Study on the low friction thick films based on carbon composites, prepared using a combined ECR –DC sputtering system. Application on low friction plain bearings engineering
Name and address of employer	Japanese Institute for Ultra-High Temperature Materials (JUTEMI), Ube, Yamaguchi, Japan
Type of business or sector	Research in industry
Dates	1996-1997
Occupation or position held	Researcher
Main activities and responsibilities	Research of the plasma processes (rf magnetron discharge, vacuum arcs) for multifunctional, nanostructured films preparation (TiN, CeO, ZnO, etc).
Name and address of employer	Nagoya University, Nagoya, Japan
Type of business or sector	University, Research
Dates	1974-1978
Occupation or position held	Physicist
Main activities and responsibilities	Research-development for printed circuits design and development field
Name and address of employer	Electronic Computers Plant, Bucharest, Romania
Type of business or sector	Research in industry

## EDUCATION AND TRAINING

Dates	1996 – 1997
Title of qualification awarded	Specialist in the field of Plasma Industrial Applications
Principal subjects/occupational skills covered	Plasma Physics, Thin films depositions using magnetron sputtering
Name and type of organisation providing education and training	Nagoya University, Japan
Level in national or international classification	ISCED 8
Dates	1990-1994
Title of qualification awarded	PhD in Physics
Principal subjects/occupational skills covered	Applied and fundamental research in low temperature plasma physics
Name and type of organisation providing education and training	Institute for Atomic Physics, Magurele-Bucharest, Romania
Level in national or international classification	ISCED 8
Dates	1973-1974
Title of qualification awarded	Specialisation in Optics, Plasma, Spectroscopy, Lasers
Principal subjects/occupational skills covered	Optics, Spectroscopy, Lasers and Plasma

Name and type of organisation providing education and training	University of Bucharest, Faculty of Physics, Romania
Level in national or international classification	ISCED 7
Dates	1969-1973
Title of qualification awarded	Bachelor of Science
Principal subjects/occupational skills covered	Optics, Spectroscopy, Lasers and Plasma Physics
Name and type of organisation providing education and training	University of Bucharest, Faculty of Physics, Romania
Level in national or international classification	ISCED 6

**PERSONAL SKILLS** Specialist in the field of low temperature plasma applications, thin films depositions, thermionic vacuum arc plasma

Mother tongue(s)	Romanian				
Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C2
French	B2	B2	B1	B1	B1
Russian	A1	A1	A1	A1	A1

**Communication skills** Good communication skills gained through the experience as research group leader as well as scientific director of NILPRP

**Organisational / managerial skills** Leadership (currently responsible for a team of 12 people, and scientific director of NILPRP: April 2015- March 2016)

**Job-related skills** Good command of plasma processing applications in preparation and characterization of thin films

Digital competence	SELF-ASSESSMENT				
	Information processing	Communication	Content creation	Safety	Problem solving
	Independent user	Independent user	Independent user	Independent user	Independent user

**Other skills** Photography, image processing

**Driving licence** B

**ADDITIONAL INFORMATION**

### Awards and prizes:

- Romanian Academy Award: 2009, Dragomir Hurmuzescu Award** for the research concerning beryllium coatings on Inconel and marker tiles using Thermionic Vacuum Arc (TVA) method.
- Prizes: Silver medal** : 2008, The world exhibition on innovation research and new technologies - 57th edition, **Brussels Innova 2008**: for the patent: Antifriction layer and preparation method (C.P.Lungu, I. Mustata, V. Zaroschi)

**Qualifications and specializations:** Japan: 1996-1997, Nagoya University Nagoya: RF type magnetron discharge study in order to obtain hard coatings; Japan: 1997-1999, Hokkaido University Sapporo: DC and RF discharges studies

for depollution and realization of low dielectric constant films; Japan: 2000-2003, Ube, Yamaguchi, JUTEMI, low coefficient of friction films studies using ECR-DC sputtering.

**Relevant work experience in the nuclear fusion domain:**

- Research and development in the field of thin film depositions, studies and applications of the low temperature plasmas;
- Deposition and characterization of pure and composite layers in order to mimic the deposits on the first wall of the fusion devices (Be, W, Be-W-C, Be-He, Be-N, Be-D..)
- Coating of Be films on the inconel tiles used in fusion devices
- Nanostructured films preparation using thermionic vacuum arc and magnetron sputtering,
- Theoretical studies on the ITER-like wall, Be-W-C formation and nuclear fuel retention of the composite films
- Electrical and optical characterization of plasmas used for films preparations.
- Be dust preparation and characterization

**Major relevant publications (last 5 years):**

1. P.Dinca, V.Tiron, I.-L.Velicu, C.Porosnicu, B.Butoi, A.Velea, E.Grigore, C.Costin, C.P.Lungu, Negative ion-induced deuterium retention in mixed W-Al layers co-deposited in dual-HiPIMS, *Surface and Coatings Technology*, **363**, 2019, 273-281
2. **R.Mateus, C.Porosnicu, N.Franco, P.A.Carvalho, C.P.Lungu, E.Alves**, Stability of beryllium coatings deposited on carbon under annealing up to 1073 K, *Fusion Engineering and Design*, **146, Part A**, 2019, 303-307.
3. **I.Burducea, A.O.Mateescu, G.Mateescu, C.Ionescu, M.Straticiuc, L.S.Craciun, C.P.Lungu, G.O.Pompilian, P.M.Racolta**, AFM, RBS and tribological properties of WC/WS<sub>2</sub> nanostructures after 1.5 MeV Nb<sup>+</sup>implantation, *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, **450**, 2019, 357-360.
4. **R.Mateus, C.Porosnicu, C.P.Lungu, C.Cruz, Z.Siketić, E.Alves**, WP PFC contributors, Analysis of retained deuterium on Be-based films: Ion implantation vs. in-situ loading, *Nuclear Materials and Energy*, **17**, 2018, 242-247.
5. **P.Dinca, C.Porosnicu, B.Butoi, I.Jepu, V.Tiron, O.G.Pompilian, I.Burducea, C.P.Lungu, I.-L.Velicu**, Surface and Coatings Technology, Beryllium-tungsten study on mixed layers obtained by m-HiPIMS/DCMS techniques in a deuterium and nitrogen reactive gas mixture, **321**, 2017, 397-402.
6. **I.Jepu, M.J.Baldwin, D.Nishijima, R.P.Doerner, C.Porosnicu, C.P.Lungu, P.Dinca, A.Marin**, The influence of fusion-relevant D<sub>2</sub>-0.1He plasma on Be-W mixed-materials, *Journal of Nuclear Materials*, **484**, 2017, 367-373
7. **K.Sugiyama, C.Porosnicu, W.Jacob, I.Jepu, C.P.Lungu**, Investigation of deuterium retention in/desorption from beryllium-containing mixed layers, *Nuclear Materials and Energy*, **6**, 2016, 1-9.
8. **I.Jepu, R.P.Doerner, M.J.Baldwin, C.Porosnicu, C.P.Lungu**, Temperature influence on deuterium retention for Be-W mixed thin films prepared by Thermionic Vacuum Arc method exposed to PISCES B plasma, *Journal of Nuclear Materials*, **463**, 2015, 983-988.

## Publications/patents

Intellectual property, (**international patent**) Slide for movably supporting another member includes slide layer containing silver and solid lubricant, **Patent Number(s): US2003180572-A1; US6740428-B2**, Inventor(s): A.Norito, T. Kawachi, H. Ishikawa, T. Shibayama, K. Iwasaki and **C. P. Lungu**, Japan Patent Office: P2002-076377, 19 March 2002, USA Patent Office: 6,740,428 B2; May 25, 2004

1. **C. P. Lungu**, C. M. Ticos, C. Porosnicu, I. Jepu, M. Lungu, A. Marcu, C. Luculescu, G. Cojocaru, D. Ursescu, R. Banici, G. R. Ungureanu, "Periodic striations on beryllium and tungsten surfaces by indirect femtosecond laser irradiation", *Applied Physics Letters* 104(10):101604, 2014;
2. **C.P. Lungu**, C.E.A. Grigorescu, M.I. Rusu, I. Jepu, C. Porosnicu, A.M. Lungu, I.D. Feraru, D. Savastru, "Nanodiamond crystallites embedded in carbon films prepared by thermionic vacuum arc method", *Diamond & Related Materials* 20 (2011) 1061–1064.
3. **C. P. Lungu**, A.M. Lungu, P. Chiru, A. Tudor, R. Brescia, "Low friction properties of nanostructured C-Ni films prepared by thermionic vacuum arc method", *Int. J. Surface Science and Engineering*, Vol. 4, No. 2, 2010, pp 191-200.
4. **C. P. Lungu**, I. Mustata, V. Zaroschi, A. M. Lungu, A. Anghel, P. Chiru, M. Rubel, P. Coad G. F. Matthews and JET-EFDA contributors, "Beryllium Coatings on Metals: Development of Process and Characterizations of Layers", *Phys. Scr.* T128 (2007) 157–161
5. **C. P. Lungu**, "Nanostructure influence on DLC-Ag tribological coatings", *Surf. and Coat.Techn.*, Vol 200, 192-202, 2005.

## Presentations

1. **C. P. Lungu** „Ternary Composite Films Interaction with High Power Laser Beam” / invited lecture / 15th International Balkan Workshop on Applied Physics and Materials Science/ 2-4 July, 2015, Constanta, Romania
2. **C. P. Lungu**, C. Porosnicu, I. Jepu, C. Ticos, P. Chiru, O. Pompilian, M.Lungu, P. P. Dinca, A. Marcu, C. Luculescu, R. Banici, G. Cojocaru, G. R. Ungureanu, D. Ursescu, C. E. A. Grigorescu, A. Marin, P. Osiceanu, "Femtosecond laser pulse influence on binary mixed Be, W and C layers / Poster, EMRS 2014, May 26-30, Spring Meeting, Lille, France
3. **C. P. Lungu**, J. Likonen, A. Hakola, C. Porosnicu, I. Jepu, A. Anghel, A. M. Lungu, P. Chiru, C. Ticos, Gh. Oncioiu, A. Victor, and JET EFDA Contributor, "XPS and SIMS Analyses of Mixed Deposition Material, 13th International Workshop on Plasma-Facing Materials and Components for Fusion Applications and 1st International Conference on Fusion Energy Materials Science, 9-13 May 2011 Rosenheim, poster P18-A

## Projects

1. IDEI 4-2011. Studies concerning high-power GW and TW laser irradiation with carbon, tungsten and beryllium films/4/2011/UEFISCDI/ 2011-2016, **Project Director**
2. **FP6-EURATOM**: Development of beryllium marker tiles for the ITER-like Wall experiment project (ILW), JW5-BEP-MEC-04), **Project Director**, 2005 -2007
3. **FP6-EURATOM**: Characterisation of fuel retention in ITER relevant mixed-materials TW5-TPP-RETMIX, **Project Director**, 2005 -2008
4. **FP6-EURATOM**: Coating of EU CFC/W targets with beryllium for exposure to ITER-like transient loads in plasm gun facilities/ TW6-TPP-BECOAT, 2006-2008, **Project Director**
5. **FP6 (FP7)-EURATOM** : Production of Beryllium Coatings for Inconel Cladding and Beryllium tile Markers for the ITER-like Wall project/ JW6-TA-EP2-ILB-01, **2007-2010, Project Director**
6. **FP7-EURATOM**: Retention of deuterium in Be by implantation and by beryllium co-deposition for ITER relevant particle impact energies/ FU06-CT-2007-00064/ **2008-2014, Project Director**
7. Permeation measurements/BS 18 A/IFA/ FP6/2011, **Project Director**
8. Preparation and characterization of Be containing films for deuterium retention/BS 18 B/IFA/ FP6/2011, **Project Director**
9. Mixed film characterization in connexion with the project „ ITER like wall” 19 O/IFA/ FP6/2011, **Project Director**
10. LIBS permeation measurements of the mixed films and fuel retention/BS18A/IFA/ FP6/2012, **Project Director**
11. Deuterium retention mechanism study of mixed materials/BS18B/IFA/ FP6/2012, **Project Director**
12. Complex characterization of films ( BE/W/N/O)/BS18A/IFA/ FP6/2012, **Project Director**
13. **EUROfusion WPJET2** /WP JET Principal/IFA/ FP7/05.06.2014-31.12.2020, **Project responsible**
14. **EUROfusion WP PFC** (Plasma Facing Components characterizations) Direct/WP-PFC Complementar IFA/FP7/05.06.2014-31.12.2020, **Project Director**

**Hirsch index: 30**, Total Articles in Publication List: **521**,

The address of the **researcherid.com** profile: <http://www.researcherid.com/rid/C-2788-2011>