europass

Curriculum Vitae

PERSONAL INFORMATION

TRANCĂ Denis-Emanuil

Şos. Sălaj, nr. 133, bl. 55, ap. 6, sector 5,
051893 Bucharest (Romania)

+40 762141818

denis_emanuil.tranca@upb.ro

Sex M | Date of birth 07/01/1987 | Nationality Romanian

RESEARCH INTERESETS

Scanning Probe Microscopy; Laser Scanning Microscopy; Digital Holographic Microscopy; Structured Illumination Microscopy; Optics; Photonics; Image Processing Algorithms; Applied Physics.

WORK EXPERIENCE

October 2016 – present

Physics Lecturer

University POLITEHNICA of Bucharest (Romania)

Faculty of Applied Sciences, Physics Department

November 2011 – present

Research Engineer

Center for Microscopy-Microanalysis and Information Processing (CMMIP) – University *POLITEHNICA* of Bucharest (Romania) – www.cmmip-upb.org

Sector High resolution scanning optical microscopy (laser and probe)

April – May 2015

Research Fellow

3D Imaging and Laboratory, Department of Optics, University of Valencia, Spain

http://www.uv.es/imaging3

April – July 2010

Research Fellow

Laboratoire Matériaux Optiques, Photonique et Systèmes –SUPÉLEC University, Metz (France)

http://lmops.univ-lorraine.fr

EDUCATION AND TRAINING

Dates
2012 – 2015

Title of qualification awarded
Doctor *in* ***Electronics Engineering***

Title of thesis
New Techniques for High-Resolution Optical Microscopy

Defense committee
Prof. Genaro Saavedra (University of Valencia); Dr. Joanna Bauer (Wroclaw University of Technology); Prof. Paul Schiopu (University Politehnica of Bucharest)

Name and type of the organization providing education
Doctoral School of Electronics, Telecommunications and Information Technology, University POLITEHNICA of Bucharest

Dates	**2010 – 2012**
Title of qualification awarded	**Master's degree** *in* ***Electronics Engineering***
Principal Subject	Optoelectronics
Name and type of the organization providing education	*Faculty of Electronics, Telecommunications and Information Technology*, University POLITEHNICA of Bucharest

Dates	**2006 – 2010**
Title of qualification awarded	***Engineer*** *in* ***Electronics and Telecommunications***
Principal Subject	Optoelectronics
Name and type of the organization providing education	*Faculty of Electronics, Telecommunications and Information Technology*, University POLITEHNICA of Bucharest

Dates	**2002 – 2006**
Name and type of the organization providing education	*Colegiul Național "Frații Buzești"* High School
Section	Mathematics and Informatics

PERSONAL SKILLS AND AWARDS

Job-related skills

- Technical and practical skills in laser-scanning and probe-scanning optical microscopy areas, skills developed at CMMIP, University Politehnica of Bucharest.
- Technical and practical skills in Digital Holographic Microscopy and Structured Illumination Microscopy, skills developed at 3D Imaging and Laboratory, Department of Optics, University of Valencia, Spain.
- Working with lasers, optical fibers and video systems, skills developed during the four months research stage at the LMOPS Laboratory, SUPELEC University, France.

Awards

- *Best Paper Award*, International Semiconductor Conference, Sinaia, 2011.
- *Certificate of Merit for Performances in Physics*, Craiova University, 2006.
- *Certificate of professional skills*, for medium-level programming, 2006.

PARTICIPATION IN NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

PROJECT	DURATION	FUNCTION
BILATERAL SCIENTIFIC COOPERATION PROJECT: ROMANIA-SLOVAKIA	2011-2012	Participant
EU-CORDIS-FP7/ REAL TIME LABEL FREE NANOSCOPY USING INFRA RED ABSORBTION (LANIR)	2012-2015	Participant
PN-II-PT-PCCA New methods and investigations protocols for the early diagnosis, efficient screening, prognostic and therapy of non-melanoma skin cancers based on existing and novel micro & nano optical tools	2012-2016	Participant
POSDRU/159/1.5/S/137390/Doctoral research fellowship: New high-resolution optical microscopy techniques	2014-2015	Participant
PN-II-RU-TE Correlation and integration of microscopy and nanoscopy data by advanced computer vision methods (MICRONANO)	2015-2017	Participant
PN-III-P2-2.1-PED-2016-0450 Quantitative Nanoscopy for Biological Tissue Characterization (Q-NANOBIOTIC)	2017-2018	**Coordinator**

PN-III-P2-2.1-PED-2016: An Experimental Machine Intelligence Framework for the Automated Differentiation of Healthy, Dysplastic and Malignant Tissues Based on Multiphoton Microscopy Datasets (MICAND)	2017-2018	Participant
PN-III-P1-1.1-TE-2016-2147: Correlative optical imaging in the far-field and near-field regimes: technical developments and applications (CORIMAG)	2018-2020	Participant
PN-III-P1-1.1-TE-2016-1756: Label-free quantitative microscopy based on second harmonic generation at nanoscale	2018-2020	Participant
PN-III-P1-1.1-TE-2016-2147: Novel Optical Imaging Approaches for the In-depth Understanding of Advanced Nanostructured Materials and their Interaction with Biological Species (NANOMATBIOIMAGE)	2018-2019	Participant

LOCAL RESEARCH PROJECTS

PROJECT	DURATION	FUNCTION
GEX 2017 - Near-field 3D Imaging (*financed by University Politehnica of Bucharest*)	2017-2018	**Coordinator**

LIST OF PUBLICATIONS

Journal Articles

2018

1. **Tranca, D. E.,** Stanciu, S. G., Hristu, R., Witgen, B. M., & Stanciu, G. A. (2018). Nanoscale mapping of refractive index by using scattering-type Scanning Near-Field Optical Microscopy. *Nanomedicine: Nanotechnology, Biology and Medicine, 14(1), 47-50.*
2. Hristu, R., Eftimie, L., Stanciu, S.G., **Tranca, D.E.**, Paun, B., Sajin, M., Stanciu, G.A. (2018). Quantitative second harmonic generation microscopy for the structural characterization of capsular collagen in thyroid neoplasms, *Biomedical Optics Express*, in press.

2017

3. Hristu, R., Stanciu, S. G., **Tranca, D. E.**, Polychroniadis, E. K., & Stanciu, G. A., 2017. Identification of stacking faults in silicon carbide by polarization-resolved second harmonic generation microscopy. *Scientific Reports, 7.*
4. Stanciu, S. G., **Tranca, D. E.**, Hristu, R., & Stanciu, G. A. (2017). Correlative imaging of biological tissues with apertureless scanning near-field optical microscopy and confocal laser scanning microscopy. *Biomedical optics express, 8(12), 5374-5383.*
5. Hristu, R., Stanciu, S. G., **Tranca, D. E**., & Stanciu, G. A. (2017). Improved quantification of collagen anisotropy with polarization-resolved second harmonic generation microscopy. *Journal of biophotonics, 10(9), 1171-1179.*

2016

6. Stanciu, S.G., Costache, M., **Tranca, D.E.**, Hristu, R., Popescu, M., Enache, V. and Stanciu, G.A., 2016. Towards imaging skin cancer by apertureless scanning near-field microscopy. *UPB Scientific Bulletin Series A, 78(2)*, pp. 235-244.
7. **Tranca, D.E.,** Stanciu, S.G., Hristu, R., Stoichita, C. and Stanciu., G.A., 2016. Amplitude and phase reconstruction issues in scattering scanning near-field optical microscopy. *UPB Scientific Bulletin Series A, 78(3)*, pp. 254-263.

8. Stanciu, S.G., **Tranca, D.E.**, Ruggiero, C., Stanciu, G.A., Dellacasa, E., Antipov, A., Hristu, R. and Pastorino, L., 2016. Combined far-field, near-field and topographic imaging of nano-engineered polyelectrolyte capsules. *Materials Letters*, *183*, pp.105-108.
9. Hristu, R., Stanciu, S.G., **Tranca, D.E.** and Stanciu, G.A., 2016. Improved quantification of collagen anisotropy with polarization-resolved second harmonic generation microscopy. *Journal of Biophotonics*, doi:10.1002/jbio.201600197, pp. 1-9.
10. Stanciu, S.G., **Tranca, D.E.**, Stanciu, G.A., Hristu, R. and Bueno, J.M., 2016. Perspectives on combining Nonlinear Laser Scanning Microscopy and Bag-of-Features data classification strategies for automated disease diagnostics. *Optical and Quantum Electronics*, *48*(6), pp.1-13.
11. Dragoi, I.C., Stanciu, S.G., Hristu, R., Coanda, H.G., **Tranca, D.E.**, Popescu, M. and Coltuc, D., 2016. Embedding complementary imaging data in laser scanning microscopy micrographs by reversible watermarking. *Biomedical Optics Express*, *7*(4), pp.1127-1137.
12. **Tranca, D.E.**, Sánchez-Ortiga, E., Saavedra, G., Martínez-Corral, M., Tofail, S.A., Stanciu, S.G., Hristu, R. and Stanciu, G.A., 2016. Mapping electron-beam-injected trapped charge with scattering scanning near-field optical microscopy. *Optics letters*, *41*(5), pp.1046-1049.
13. **Tranca, D. E**., Stanciu, S. G., Hristu, R., Stoichita, C., Tofail, S. A. M., and Stanciu, G. A., 2016. Nanoscale mapping of dielectric function by scattering scanning near-field optical microscopy. *Imaging and Microscopy, 18(1)*, 40-42.

2015

14. Stanciu, S.G., **Tranca, D.E.** and Coltuc, D., 2015. Contrast enhancement influences the detection of gradient based local invariant features and the matching of their descriptors. *Journal of Visual Communication and Image Representation*, *32*, pp.246-256.
15. Matei, A.A., Pencea, I., Branzei, M., **Tranca, D.E.**, Ţepeş, G., Sfăt, C.E., Ciovica, E., Gherghilescu, A.I. and Stanciu, G.A., 2015. Corrosion resistance appraisal of TiN, TiCN and TiAlN coatings deposited by CAE-PVD method on WC–Co cutting tools exposed to artificial sea water. *Applied Surface Science*, *358*, pp.572-578.
16. **Tranca, D.E.,** Stanciu, S.G., Hristu, R., Stoichita, C., Tofail, S.A.M. and Stanciu, G.A., 2015. High-resolution quantitative determination of dielectric function by using scattering scanning near-field optical microscopy. *Scientific reports*, *5*.
17. Hristu, R., Stanciu, S.G., **Tranca, D.E.** and Stanciu, G.A., 2015. Electron beam influence on the carbon contamination of electron irradiated hydroxyapatite thin films. *Applied Surface Science*, *346*, pp.342-347.
18. **Tranca, D.E.**, Stanciu, G.A., 2015. New approaches for high-resolution optical microscopy. *Proceedings of Doctoral Consortium PHOTOPTICS 2015 (Available on Scitepress Digital Library)*, pp.19-25.

2014

19. Hristu, R., Stanciu, S.G., **Tranca, D.E.,** Matei, A. and Stanciu, G.A., 2014. Nonlinear optical imaging of defects in cubic silicon carbide epilayers. *Scientific reports*, *4*.
20. Hristu, R., **Tranca, D.E.,** Stanciu, S.G., Gregor, M., Plecenik, T., Truchly, M., Roch, T., Tofail, S.A. and Stanciu, G.A., 2014. Surface Charge and Carbon Contamination on an Electron-Beam-Irradiated Hydroxyapatite Thin Film Investigated by Photoluminescence and Phase Imaging in Atomic Force Microscopy. *Microscopy and Microanalysis*, *20*(2), p.586.
21. **Tranca, D.E.,** Stoichita, C., Hristu, R., Stanciu, S.G. and Stanciu, G.A., 2014. A study on the image contrast of pseudo-heterodyned scattering scanning near-field optical microscopy. *Optics express*, *22*(2), pp.1687-1696.

2013

22. Stanciu, S.G., Coltuc, D., **Tranca, D.E.** and Stanciu, G.A., 2013. Matching DSIFT Descriptors Extracted from CSLM Images. *Engineering*, *5*(10), p.199.

2012

23. **Tranca, D.E.,** Tomescu, R. and Schiopu, P., 2012. Design and simulation of infrared optical logic gates based on Si photonic crystal waveguides for high density photonic integrated circuits. In *Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies 2012*, pp. 84110Q-84110Q.

2011

24. Wolfersberger, D. and **Tranca, D.,** 2011. 2D infrared self-focusing in bulk photorefractive SBN. *Optical Materials Express*, *1*(7), pp.1178-1184.

Conferences

1. Nonlinear effects in scanning laser microscopy used to investigate silicon carbide polytypes, G.A.Stanciu, R. Hristu, S.G. Stanciu**, D.E. Tranca,** E.K. Polychroniadis, *Focus on Microscopy*, 2012, Singapore;
2. Enhancing local feature matching between CSLM images by histogram modeling, S.G. Stanciu, D.Coltuc, R. Hristu, **D. Tranca**, G.A. Stanciu, *Focus on Microscopy*, 2012, Singapore;
3. Metallic samples investigated by using a scattering near field optical microscope, G.A. Stanciu, C.Stoichita, R. Hristu, S.G. Stanciu, **D.E. Tranca**, *International Conference on Transparent Optical Networks 2012*, Warwick, England (invited lecture);
4. Scattering near-field optical microscopy for gold nano-particles investigations, **Denis E. Tranca**, Radu Hristu, Stefan G. Stanciu and George A. Stanciu, 2012 *Workshop on Super-resolution and Life Sciences*, 3-6 October 2012, Brasov, Romania;
5. Optical and morphological characterization of electron beam created surface potential micro domains on hydroxyapatite coatings, Radu Hristu, Stefan G. Stanciu, **Denis E. Tranca**, George A. Stanciu, *Workshop on Super-resolution and Life Sciences*, 3-6 October 2012, Brasov, Romania;
6. Investigations on skin cancers by nonlinear optical microscopy, S.G. Stanciu, M. Popescu, R. Hristu, V. Enache, **D.E. Tranca** & G.A. Stanciu, *Focus on Microscopy*, 2013, Maastricht, The Netherlands;
7. Investigations at nanoscale by using fluorescence in apertureless scanning near field microscopy, G.A. Stanciu, **D.E. Tranca**, R. Hristu, C. Stoichita, S.G. Stanciu, *15th International Conference on Transparent Optical Networks 2013*, Cartagena, Spain, (invited lecture);
8. Combined microscopy techniques boost biomedical imaging of ocular tissues, J.M. Bueno, **D. Tranca**, F.J. Valiente-Soriano, M. Aviles-Trigueros, S.G. Stanciu & G.A. Stanciu, *Focus On Microscopy*, 2014, Sydney, Australia;
9. Hydroxyapatite surface charge investigated by scanning probe microscopy, R. Hristu, S.A.M. Tofail, S.G. Stanciu, **D.E. Tranca**, and G.A. Stanciu, *16th International Conference on Transparent Optical Networks*, 6-10 July 2014, Graz, Austria (invited lecture);
10. Investigations on Organic Fluorophore Doped Silica Nanoparticles by Apertureless Scanning Near Field Optical Microscopy, S.G. Stanciu, **D.E. Tranca**, L. Tarpani, G.A. Stanciu, R. Hristu and L.Latterini, *16th International Conference on Transparent Optical Networks*, 2014, Graz, Austria (invited lecture);

11. Scattering scanning near field optical microscopy used for nanoscale investigations, G.A.Stanciu, **D.E. Tranca**, R. Hristu, C. Stoichita and S.G. Stanciu, *International Conferences on Laser Applications in Life Sciences (LALS)*, 29th June – 2nd July, 2014, Ulm, Germany (invited lecture);
12. Investigations on image contrast in pseudo-heterodyne scattering scanning near-field optical microscopy, **D.E. Tranca**, S.G. Stanciu, C. Stoichita, R. Hristu, S.A.M. Tofail & G.A. Stanciu, *Focus on Microscopy* 2015, Gottingen, Germany;
13. Interrelationship between electron-beam-induced surface charge and carbon contamination on hydroxyapatite, R. Hristu, S.G. Stanciu, **D.E. Tranca** & G.A. Stanciu, *Focus on Microscopy*, 2015, Gottingen, Germany;
14. A Platform for Micro- and Nanoscale Optical Imaging Using Complementary Contrast Mechanisms, S.G. Stanciu, C. Stoichita, R. Hristu, **D.E. Tranca** and G.A. Stanciu, *15th annual meeting of the European Light Microscopy Initiative (ELMI)*, 2015, Sitges, Spain;
15. Combined Multimodal Imaging at Micro- and Nanoscale Using Complementary Contrast Mechanisms, S.G. Stanciu, C. Stoichita, R. Hristu, **D.E. Tranca** and G.A. Stanciu, *EuroNanoForum* 2015, Riga, Latvia;
16. Bags-of-Features for classification of Laser Scanning Microscopy Data, S.G. Stanciu, R.Hristu, **D.E. Tranca**, G.A. Stanciu, IEEE *International Conference on Transparent Optical Networks* 2015, Budapest, Hungary (invited lecture);
17. On Packing Laser Scanning Microscopy Images by Reversible Watermarking: a Case Study, C. Dragoi, S.G. Stanciu, D. Coltuc, **D.E. Tranca**, R. Hristu and G.A. Stanciu, *23rd IEEE European Signal Processing Conference (EUSIPCO)*, 2015, Nice, France;
18. Combining Multiphoton Laser Scanning Microscopy and Bag-of-Features Image Classification for Automated Disease Diagnosis, S.G. Stanciu, R. Hristu, **D.E. Tranca**, G.A. Stanciu, J.M. Bueno, *International Conference on Advanced Laser Technologies (ALT 15)*, 2015, Faro, Portugal (invited lecture);
19. Automatic Moiré Pattern Removal in Microscopic Images, G.M. Ionita, D. Coltuc, S.G. Stanciu, **D.E. Tranca**, *19th International Conference on System Theory, Control and Computing (ICSTCC)*, 2015, Cheile Gradistei-Fundata, Romania;
20. Ocular Tissues Investigated by Using Scattering Scanning near-Field Optical Microscopy and Atomic Force Microscopy, J.M. Bueno, S.G. Stanciu, **D.E. Tranca**, F.J. Avila, M. Aviles-trigueros, G.A. Stanciu, *Focus on Microscopy*, 2016, Taipei, Taiwan;
21. Surface Imaging of Biological Cells by Using Scattering Scanning Near-Field Optical Microscopy, **D.E. Tranca**, S.G. Stanciu, R. Hristu, and G.A. Stanciu, *12th International Congress of Cell Biology*, 2016, Prague, Czech.
22. Nonlinear optical microscopy for investigation of gastrointestinal lesions, T. Genova, E. Borisova., G. Stanciu, D. Tranca, I. Terziev, N. Penkov, B. Vladimirov, M. Lomova, O. Semyachkina-Glushkovskaya and L. Avramov, *International Conference and School on Quantum Electronics*, 2016, Sozopol, Bulgaria.
23. Nonlinear optical microscopy for investigation of gastrointestinal lesions., Genova, T., Borisova, E., Stanciu, G., **Tranca, D.**, Terziev, I., Penkov, N., ... & Avramov, L, In I*nternational Conference and School on Quantum Electronics (pp. 1022617-1022617), 2017.*
24. Fractal analysis correlation of the images from scanning laser microscopy techniques and atomic force microscopy, A. Toma, **D.E. Tranca**, C.V. Sammut, and G.A. Stanciu, IEEE *International Conference on Transparent Optical Networks* 2017, Girona, Spain (invited lecture).
25. Correlative Optical Imaging in the Far-field and Near-field Regimes of Nanostructured Materials and Biological Specimens, S.G. Stanciu, **D.E. Tranca**, R. Hristu, G.A. Stanciu, *3rd International Symposium on Nanoparticles-Nanomaterials and Applications* (3rd ISN2A-2018), Caparica, Portugal, 22-25 January 2018.