

## **KALYVAS NEKTARIOS**

**Short CV in English** (February 2024)

### **Personal Information**

Birthday 1971

Business Address: University of West Attica, Department of Biomedical Engineering, Campus 1, Agiou Spyridonos 17, 12243 Egaleo

Tel: 0030-2105385319

e-mail: [nkalyvas@uniwa.gr](mailto:nkalyvas@uniwa.gr), nek611@yahoo.gr

### **Professional Experience (Job Positions)**

- From 19/2/2024 I am a Professor in West Attica University, Department of Biomedical Engineering
- From 14/2/2020 I am an Associate Professor in West Attica University, Department of Biomedical Engineering
- From 24/1/2014 till 13/2/2020 I was an Assistant Professor in West Attica University ( ex TEI of Athens), Department of Biomedical Engineering
- From 1/6/2010 till 23/1/2014 I was a Professor of Applications in TEI of Athens, Department of Medical Instruments Technology.
- From 6/8/2009 till 31/05/2010 I had a contract with Greek Atomic Energy Commission as a Medical Radiation Physicist.
- From 10/7/2009 till 5/8/2009 I was appointed in the Social Insurance Institute of Greece as a Medical Radiation Physicist.
- From 1/1/2003 till 9/7/2009 I had a contract with Greek Atomic Energy Commission as a Medical Radiation Physicist..
- From 21/11/2001 till 20/12/2002 I had a contract with Intracom, S.A. Division of AXE Software as a physicist-analyst.

### **Academic Degrees**

1995 Bachelor in Physics (4 years-ptyhio), University of Patras Greece

1997 Master (MSc) in Medical Physics, University of Patras, Greece.

2002 Doctorate (PhD) in Medical Physics, University of Patras, Greece

### **Professional License**

- Licensed Medical Radiation Physicist

### **Languages**

English (Certificate of Proficiency in English, University of Michigan)

### **Other**

- Reviewer in European Radiology Journal
- Reviewer in Journal of Alloys and Compounds
- Reviewer in IEEE Transactions in Nuclear Science
- Reviewer in Nuclear Instruments and Methods in Physics Research A
- Reviewer in European Journal of Medical Physics (EJMP-Physica Medica)
- Reviewer in EPOS (Electronic Posters for the ECR conferences)
- Reviewer in Measurement
- Reviewer in Sensors
- Reviewer in Applied Sciences
- Reviewer in Life
- Reviewer in Materials
- Reviewer in International Journal of Molecular Sciences.
- Reviewer in Crystals
- Reviewer in International Journal of Environmental Research and Public Health.
- Reviewer in Electronics.

**Research and Scientific Activities:** (i) Scintillator and phosphor materials evaluation for application in detectors of medical imaging systems (Experimental and theoretical methods). (ii) Evaluation of medical imaging systems using objective image quality metrics (iii) Dosimetry in Diagnostic Radiology applications.

**Scientific Publications:** original papers in international peer review scientific journals with impact factor (74), publications in conference proceedings (over 30 @ scopus) and citations (excluding self-citations 786@ scopus).

### **List of funded projects as member of the research team.**

1. Excellence 1(GSRT/NSRF 2007-2013), Project title “Medical Image Science through Luminescence – MISCIRLU”. Project number 1476. duration 2012 - 2015 (36 months). Budget 308000 Euro. (P.I. Kandarakis).
2. ARHIMIDES III – Granted research in TEI of Athens (NSRF 2007-2013) 11.1.1 - MIS 379389 NANOCARLO - Evaluation of nanophosphors for medical imaging applications: monte carlo

simulation and experimental evaluation of a nanophosphor-cmos prototype, subproject 25.  
Budget 83000 Euro. (P.I. Kandarakis).

**A. Peer reviewed journal papers (with impact factor)**

1. Kalivas N., Kandarakis I., Cavouras D., Costaridou L., Nomicos C.D. and Panayiotakis G.: “Modeling quantum noise of phosphors used in medical x-ray imaging detectors”. *Nuclear Instruments and Methods in Physics Research A* 430, 559-569, 1999.
2. Kalivas N., Costaridou L, Kandarakis I., Cavouras D., Nomicos C.D. Panayiotakis G.: “Effect of intrinsic gain fluctuations on quantum noise of phosphors used in medical x-ray imaging detectors”. *Applied Physics A* 69, 337-341, 1999.
3. Kandarakis I., Cavouras D., Kalivas N., Nomicos C.D., Panayiotakis G.S.: “Estimation of the information content of medical images produced by scintillators interacting with diagnostic X-ray beams”. *Nuclear Instruments and Methods in Physics Research B* 155, 199-205, 1999.
4. Kalivas N., Costaridou L., Kandarakis I., Cavouras D., Nomicos C.D. and Panayiotakis G.: “Modeling quantum and structure noise of phosphors used in medical x-ray imaging detectors”. *Nuclear Instruments and Methods in Physics Research A* 490, 614-629, 2002.
5. Kalivas N., Costaridou L., Kandarakis L., Kandarakis I., Cavouras D., Nomicos C.D. and Panayiotakis G.: “Optical Gain Signal-to-Noise Ratio Transfer Efficiency as an index for ranking of phosphor-photodetector combinations used in X-ray medical imaging”. *Applied Physics A* 78:915-919, 2004.
6. Kandarakis I., Cavouras D., Sianoudis I., Nikolopoulos D., Episkopakis A., Linardatos D., Margetis D., Nirgianaki E., Rousou M., Melissaropoulos P., Kalivas N., Kalatzis I., Kourkoutas K., Dimitropoulos N., Louizi A., Nomicos C. and Panayiotakis G.: “On the response of  $Y_3Al_5O_{12}:Ce$  (YAG:Ce) powder scintillating screens to medical imaging X-rays”. *Nuclear Instruments and Methods in Physics Research A* 538, 615-630, 2005.
7. Kandarakis I., Cavouras D., Nikolopoulos D., Anastasiou A., Dimitropoulos N., Kalivas N., Ventouras E., Kalatzis I., Nomicos C. and Panayiotakis G.: “Evaluation of ZnS:Cu phosphor as X-ray to light converter under mammographic conditions”. *Radiation Measurements* 39, 263-275, 2005.
8. Cavouras D., Kandarakis I., Nikolopoulos D., Kalatzis I., Kagadis G., Kalivas N., Episkopakis A., Linardatos D., Roussou M., Nirgianaki E., Margetis D., Valais I., Sianoudis I., Kourkoutas K., Dimitropoulos N., Louizi A., Nomicos C. and Panayiotakis G.: “Light emission efficiency and imaging performance of  $Y_3Al_5O_{12}:Ce$  (YAG:Ce) powder screens under diagnostic radiology conditions”. *Applied Physics B*, 80(7), 923-933, 2005.

9. Kandarakis I., Cavouras, D., Nikolopoulos D., Kalivas N., et al.: “Theoretical model for evaluation of the angular distribution of the luminescence efficiency in granular scintillating screens”. *Applied Radiation and Isotopes*, 64, 508-519, 2006.
10. Efsthopoulos E.P., Katritsis D.G., Kottou S., Kalivas N., Tzanalaridou E., et al.: “Patient and staff radiation dosimetry during cardiac electrophysiology studies and catheter ablation procedures: a comprehensive analysis”. *Europace*, 8, 443-448, 2006.
11. Patatoukas G., Gaitanis A., Kalivas N., et al.: “The effect of energy weighting on the SNR under the influence of non-ideal detectors in mammographic applications”. *Nuclear Instruments and Methods in Physics Research A* 569, 260-263, 2006.
12. Kalivas N., Valais I., Salemis G., et al.: “Imaging properties of cerium doped Yttrium Aluminum Oxide (YAP:Ce) powder scintillating screens under X-ray excitation”. *Nuclear Instruments and Methods in Physics Research A* 569, 210-214, 2006.
13. Valais I., Nikolopoulos D., Kalivas N., et al.: “As systematic study of the performance of CsI:Tl single crystal scintillator under X-ray excitation”. *Nuclear Instruments and Methods in Physics Research A* 571, 343-345, 2007.
14. Efthimiou N., Kalivas N. et al. : “Investigation of the effect of the scintillator material on the overall X-ray detection system performance by application of analytical models”. *Nuclear Instruments and Methods in Physics Research A* 571, 270-273, 2007.
15. David S., Michail C., Valais I., Nikolopoulos D., Liaparinos P., Kalivas N. et al.: “Efficiency of Lu<sub>2</sub>SiO<sub>5</sub>:Ce (LSO) powder phosphor as X-ray to light converter under mammographic imaging conditions”. *Nuclear Instruments and Methods in Physics Research A* 571, 346-349, 2007.
16. Economides S., Hourdakis C.J., Kalivas N., Kalathaki M. et al.: “Performance of medical radiographic X-ray systems in Greece for the time period 1998-2004”. *Physica Medica* 23, 107-114, 2007.
17. Kalivas N., Valais I., Nikolopoulos D., Konstantinidis A.: et al.: “Light emission efficiency and imaging properties of YAP:Ce granular phosphor screens” *Appl. Phys. A*, 89, 443-449, 2007.
18. Michail C., David S., Liaparinos P., Valais I., Nikolopoulos D., Kalivas N. et al.: “Evaluation of the imaging performance of LSO powder scintillator for use in X-ray mammography” *Nuclear Instruments and Methods in Physics Research A* 580, 558-561, 2007.
19. Liaparinos P., Kandarakis I., Cavouras D., Kalivas N., Delis H. and Panayiotakis G.: “Evaluation of high packing density powder X-ray screens by Monte Carlo methods” *Nuclear Instruments and Methods in Physics Research A* 580, 427-429, 2007.
20. Economides S., Hourdakis C.J., Kalivas N., Kalathaki M. et al.: “Image quality evaluation and patient dose assessment of medical fluoroscopic X-ray systems: A National study”. *Radiation Protection Dosimetry*, 129(4), 419-425, 2008.

21. Michail C., Valais I., Toutountzis A., Kalyvas N. et al.: "Light emission efficiency of Gd<sub>2</sub>O<sub>2</sub>S:Eu (GOS:Eu) powder screens under X-ray mammography conditions" IEEE Transactions on Nuclear Science 55(6), 3703-3709, 2008.
22. Michail C.M., Fountos G.P., David S.L., Valais I.G., Toutountzis A.E., Kalyvas N.E., Kandarakis I.S. and Panayiotakis G.S.: "A comparative investigation of Lu<sub>2</sub>SiO<sub>5</sub>:Ce and Gd<sub>2</sub>O<sub>2</sub>S:Eu powder scintillators for use in x-ray mammographic detectors". Meas. Sci. Technol. 20 doi:10.1088/0957-0233/20/10/104008, 2009.
23. Michail C., Toutountzis A., David S., Kalyvas N., Valais I., Kandarakis I.S. and Panayiotakis G.S.: "Imaging performance and light emission efficiency of Lu<sub>2</sub>SiO<sub>5</sub>:Ce (LSO:Ce) powder scintillator under X-ray mammographic conditions". Appl. Phys. B 95, 131-139, 2009.
24. Michail C., Spyropoulou V., Kalyvas N., Valais I., Dimitropoulos N., Fountos G., Kandarakis I and Panayiotakis G.: "The influence of software filtering in digital mammography image quality" JINST P05018, May 2009.
25. Konstantinidis A., Liaparinos P., Kalivas N., Panayiotakis G., and Kandarakis I.: "Investigation of two heavy element scintillators by Monte-Carlo methods" JINST P05019, May 2009.
26. Spyropoulou V., Kalyvas N., Gaitanis A., Michail C., Panayiotakis G. and Kandarakis I. "Modeling the imaging performance and low contrast detectability in digital mammography" JINST P06004, June 2009.
27. Petropoulou A., Kalyvas N., Kandarakis I., Valais I. and Panayiotakis G.S.: "A theoretical model describing the light emission efficiency of single-crystal scintillators in the diagnostic energy range" JINST P06016, June 2009.
28. Kalyvas N., Valais I., Costaridou L., Kandarakis I., Cavouras D., Nomicos C.D., and Panayiotakis G.: "Evaluating optical spectra matching of phosphor-photodetector combinations" JINST P07003, July 2009.
29. Michail C., Fountos G., Liaparinos P., Kalyvas N et al.: "Light emission efficiency and imaging performance of Gd<sub>2</sub>O<sub>2</sub>S:Eu powder screens under X-ray radiography conditions" Med. Phys., 37(7), 3694-3703, 2010
30. Michail C.M., Spyropoulou V.A., Fountos G.P., Kalyvas N.I., Valais I.G., Kandarakis I.S. and Panayiotakis G.S.: "Experimental and Theoretical Evaluation of a High Resolution CMOS Based Detector under X-ray Imaging Conditions" IEEE Transactions on Nuclear Science 58(1), 314-322, 2011.
31. Michail C.M., Fountos G.P., Valais I.G., Kalyvas N.I., Liaparinos P.F, Kandarakis I.S. and Panayiotakis G.S.: "Evaluation of the Red Emitting Gd<sub>2</sub>O<sub>2</sub>S:Eu Powder Scintillator for use in X-ray Digital Mammography Detectors" IEEE Transactions on Nuclear Science 58(5) part 2, 2503-2511, 2011.
32. Kalathaki M., Hourdakis C.J., Economides S., Tritakis P., Kalyvas N., Simantirakis G., Manousaridis G., Kaisas I. and Kamenopoulou V.: "Comparison of full field digital (ffd) and

- computed radiography (cr) mammography systems in Greece”. *Radiation. Protection Dosimetry*, 147(1-2), 202-205, 2011.
33. Kalyvas N., Liaparinos P., Michail C., David S., Fountos G., Wójtowich M, Zych E and Kandarakis I.: “Studying the luminescence efficiency of Lu<sub>2</sub>O<sub>3</sub>:Eu nanophosphor material for digital X-ray imaging applications” *Applied Physics A*, 106(1), 131-136, 2012.
  34. Nikolopoulos D., Kalyvas N., Valais I., Argyriou X., Vlamakis E., Sevvos T. and Kandarakis I.: “A semi-empirical Monte Carlo based model of the Detector Optical Gain of Nuclear Imaging scintillators”, *JINST*, 7, P11021, 2012.
  35. Liaparinos P., Kalyvas N., Kandarakis I., Cavouras D. “Analysis of the imaging performance in indirect digital mammography detectors by linear systems and signal detection models” *Nuclear Instruments and Methods in Physics Research A* 697, 87-98, 2013.
  36. Michail C., Kalyvas N., Valais I., David S., Seferis I., Toutountzis A., Karabotsos A., Liaparinos P., Fountos G. and Kandarakis I.: “On the response of GdAlO<sub>3</sub>:Ce scintillators”, *Journal of Luminescence* 144, 45-52, 2013.
  37. Seferis I.E., Michail C.M., Valais I.G., Fountos G.P. Kalyvas N.I., Stomatia F., Oikonomou G., Kandarakis I.S. and Panayiotakis G.S.: “On the response of europium doped phosphor-coated CMOS digital imaging detector”, *Nuclear Instruments and Methods in Physics Research A* 729, 307-315, 2013.
  38. Seferis I.E., Michail C.M., Valais I.G., Zeler J, Liaparinos P, Fountos G. Kalyvas N., David S., Stomatia F., Zych E., Kandarakis I. and Panayiotakis G.: “Light emission efficiency and imaging performance of Lu<sub>2</sub>O<sub>3</sub>:Eu nanophosphor under X-ray radiography conditions: Comparison with Gd<sub>2</sub>O<sub>2</sub>S:Eu”, *Journal of Luminescence* 151, 229-234, 2014.
  39. Michail C., Kalyvas N., Valais I., Fudos I., Fountos G., Dimitropoulos N., Koulouras G., Kandris D., Samarakou M. and Kandarakis I.: “Figure of Image Quality and Information Capacity in Digital Mammography” *BioMed Research International*, Article ID 634856, <http://www.hindawi.com/journals/bmri/2014/634856/> , 2014.
  40. Kalyvas N., Valais I., David S., Michail Ch., Fountos G., Liaparinos P and Kandarakis I.: “Studying the Energy Dependence of Intrinsic Conversion Efficiency of Single Crystal Scintillators Under X-ray Excitation” *Optics and Spectroscopy*, 116(5), 743-747, 2014.
  41. Michail C., Valais I., Seferis I., Kalyvas N., David S., Fountos G., Kandarakis I.: “Measurement of the luminescence properties of Gd<sub>2</sub>O<sub>2</sub>S:Pr,Ce,F powder scintillators under X-ray radiation” *Radiation Measurements* 70, 59-64, 2014.
  42. Martini N., Koukou V., Michail C., Sotiropoulou P., Kalyvas N., Kandarakis I., Nikiforidis G. and Fountos G.: “Pencil Beam Spectral Measurements of Ce, Ho, Yb and Ba Powders for Potential Use in Medical Applications” *Journal of Spectroscopy* Article ID 563763, 2015. <http://www.hindawi.com/journals/jspec/2015/563763/>

43. Kalyvas N., Valais I., Michail C., Fountos G., Kandarakis I., Cavouras D.: “A theoretical study of CsI:Tl columnar scintillator image quality parameters by analytical modeling” *Nuclear Instruments and Methods in Physics Research A*, 779, 18-24, 2015.
44. C. Michail, I Valais, I Seferis, N Kalyvas, G Fountos, I Kandarakis "Experimental measurement of a high resolution CMOS detector coupled to CsI scintillators under X-ray radiation" *Radiation Measurements* 74, 39-46, 2015
45. Vlachos I., Tsantilas X., Kalyvas N., Delis H., Kandarakis I. and Panayiotakis G.: “Measuring Scatter Radiation in Diagnostic X-rays for Radiation Protection Purposes” *Radiation Protection Dosimetry*, pp 1-4, 2015, DOI:10.1093/rpd/ncv093
46. Michail C., David S., Bakas A., Kalyvas N., Fountos G., Kandarakis I. and Valais I.: “Luminescence efficiency of (Lu,Gd)<sub>2</sub>SiO<sub>5</sub>:Ce (LGSO:Ce) crystals under X-ray radiation” *Radiation Measurements*, 80, 1-9, 2015.
47. Koukou V., Martini N., Nichail C., Sotiropoulou P., Fountzoula C., Kalyvas N., Kandarakis I., Nikiforidis G. and Fountos G.: “Dual Energy Method for Breast Imaging: A simulation Study” *Computational and Mathematical Methods in Medicine*, Article ID 574238, 2015, <http://dx.doi.org/10.1155/2015/574238>.
48. David S., Michail C., Seferis I., Valais I., Fountos G., Liaparinos P., Kandarakis I., Kalyvas N.: “Evaluation of Gd<sub>2</sub>O<sub>2</sub>S:Pr granular phosphor properties for X-ray mammography imaging” *Journal of Luminescence*, 169, 706-710, 2016.
49. I.E. Seferis, J. Zeler, C. Michail, I. Valais, G. Fountos, N. Kalyvas, A. Bakas, I. Kandarakis, E. Zych.: “On the response of semitransparent nanoparticulated films of LuPO<sub>4</sub>:Eu in poly-energetic X-ray imaging applications”, *Applied Physics A*, 122, 526 (1-10) , 2016.
50. C. Michail, I. Valais, N. Martini, V. Koukou, N. Kalyvas, A. Bakas, I. Kandarakis, G. Fountos: “Determination of the detective quantum efficiency (DQE) of CMOS/CsI imaging detectors following the novel IEC 62220-1-1:2015 International Standard” *Radiation Measurements* 94, 8-17, 2016 <http://dx.doi.org/10.1016/j.radmeas.2016.04.005>
51. P. Liaparinos, N. Kalyvas, E. Katsiotis and I. Kandarakis.: “Investigating the particle packing of powder phosphors for imaging instrumentation technology: an examination of Gd<sub>2</sub>O<sub>2</sub>S:Tb phosphor” *JINST*, 11, P10001, 2016, doi:[10.1088/1748-0221/11/10/P10001](https://doi.org/10.1088/1748-0221/11/10/P10001).
52. C. Michail, G. Karpetas, G. Fountos, N. Kalyvas, I. Valais, A. Zanglis, I. Kandarakis, G. Panayiotakis: “A novel method for the optimization of positron emission tomography scanners imaging performance” *Hellenic Journal of Nuclear Medicine*, September-October, 231-240, 2016.
53. V. Koukou, N. Martini, G. Fountos, C. Michail, P. Sotiropoulou, A. Bakas, N. Kalyvas, I. Kandarakis, R. Speller, G. Nikiforidis: “Dual energy subtraction method for breast calcification imaging” *Nuclear Instruments and Methods in Physics Research A*, 848, 31-38, 2017.

54. K. Psichis, N. Kalyvas, I. Kandarakis, G. Panayiotakis “An analytical approach to the light transport in columnar phosphors. Detector Optical Gain, angular distribution and the CsI:Tl paradigm” *Physica Medica*, 35, 39-49, 2017.
55. I. Seferis, J. Zeler, C. Michail, S. David, I. Valais, G. Fountos, N. Kalyvas, A. Bakas, I. Kandarakis, E. Zych, G. Panayiotakis “Grain size and shape dependence of luminescence efficiency of Lu<sub>2</sub>O<sub>3</sub>:Eu thin screens” *Results in Physics*, 7, 980-981, 2017 (*Microarticle*)
56. G. Karpetas, C. Michail, G. Fountos, N. Kalyvas, I. Valais, I. Kandarakis, G. Panayiotakis “Detective quantum efficiency (DQE) in PET scanners: A simulation study” *Applied Radiation Isotopes*, 125, 154-162, 2017.
57. C. Michail, I. Valais, G. Fountos, A. Bakas, C. Fountzoula, N. Kalyvas, A. Karabotsos, I. Sianoudis, I. Kandarakis “Luminescence efficiency of calcium tungstate (CaWO<sub>4</sub>) under X-ray radiation: Comparison with Gd<sub>2</sub>O<sub>2</sub>S:Tb” *Measurement* 120, 213-220, 2018.
58. I. Seferis, C. Michail, J. Zeler, N. Kalyvas, I. Valais, G. Fountos, A. Bakas, I. Kandarakis, E. Zych, G.S. Panayiotakis: “Detective quantum efficiency (DQE) of high X-ray absorption Lu<sub>2</sub>O<sub>3</sub>:Eu thin screens: the role of shape and size of nano- and micro-grains, *Applied Physics A*, 124:604, 2018, <https://doi.org/10.1007/s00339-018-2034-2>.
59. C. Michail, G. Karpetas, N. Kalyvas, I. Valais, I.Kandarakis, K. Agavanakis, G. Panayiotakis, and G. Fountos.: “Information Capacity of Positron Emission Tomography Scanners” *Crystals*, 8, 2018, doi:10.3390/cryst8120459.
60. N. Kalyvas, P. Liaparinos: “Analytical and Monte Carlo comparisons on the optical transport mechanisms of powder phosphors” *Optical Materials*, 88, 396-405, 2019.
61. C. Michail, N. Kalyvas, A. Bakas, K. Ninos, I. Sianoudis, G. Fountos, I. Kandarakis, G. Panayiotakis and I. Valais.: “Absolute Luminescence Efficiency of Europium-Doped Calcium Fluoride (CaF<sub>2</sub>:Eu) Single Crystals under X-ray Excitation” *Crystals*, 9, 2019, 234 doi:10.3390/cryst9050234.
62. G.Saatsakis, C. Michail, C. Fountzoula, N.Kalyvas, A. Bakas, K. Ninos, G. Fountos, I. Sianoudis, I. Kandarakis, G.S. Panayiotakis and I. Valais.: “Fabrication and Luminescent Properties of Zn-Cu-In-S/ZnS Quantum Dot Films under UV Excitation” *Applied Sciences*, 9, 2367, 2019, doi:10.3390/app9112367
63. G.Saatsakis, N. Kalyvas, C. Michail, K. Ninos, A. Bakas, C. Fountzoula, I. Sianoudis, G.E. Karpetas, G. Fountos, I. Kandarakis, I. Valais and G. Panayiotakis “Optical Characteristics of ZnCuInS/ZnS (Core/Shell) Nanocrystal Flexible Films Under X-ray Excitation” *Crystals*, 9, 2019, 343 doi:10.3390/cryst9070343.
64. A. Anastasiou, F. Papastamati, A. Bakas, C. Michail, V. Koukou, N. Martini, K. Ninos, E. Lavdas, I. Valais, G. Fountos, I. Kandarakis and N. Kalyvas “Spatial frequency domain analysis of a commercially available digital dental detector” *Measurements*, 151, 107171, 2020.



65. C. Michail, K. Ninos, N. Kalyvas, A. Bakas, G. Saatsakis, G. Fountos, I. Sianoudis, G. Panayiotakis, I. Kandarakis, I. Valais "Spectral efficiency of lutetium aluminum garnet (Lu<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>:Ce) with microelectronic optical sensors", *Microelectronics Reliability* 109 (2020) 113658. <https://doi.org/10.1016/j.microrel.2020.113658>
66. C. Michail, V. Koukou, N. Martini, G. Saatsakis, N. Kalyvas, A. Bakas, I. Kandarakis, G. Fountos, G. Panayiotakis and I. Valais "Luminescence Efficiency of Cadmium Tungstate (CdWO<sub>4</sub>) Single Crystal for Medical Imaging Applications" *Crystals*, 10, 2020, 429, doi:10.3390/cryst10060429.
67. K. Psichis, N. Kalyvas, I. Kandarakis, G. Panayiotakis "MTF of columnar phosphors with a homogeneous part: an analytical approach" *Medical & Biological Engineering & Computing*, 58, 2551-2565, 2020. <https://doi.org/10.1007/s11517-020-02243-4>
68. D. Linardatos, A. Konstantinidis, I. Valais, K. Ninos, N. Kalyvas, A. Bakas, I. Kandarakis, G. Fountos and C. Michail "On the optical response of Tellurium Activated Zinc Selenide ZnSe:Te Single Crystal" *Crystals*, 10, 2020, 961, doi:10.3390/cryst10110961.
69. Stavros Tseremoglou, Christos Michail, Ioannis Valais, Konstantinos Ninos, Athanasios Bakas, Ioannis Kandarakis, George Fountos and Nektarios Kalyvas\* "Efficiency Properties of Cerium-Doped Lanthanum Chloride (LaCl<sub>3</sub>:Ce) Single Crystal Scintillator under Radiographic X-ray Excitation" *Crystals* 2022, 12, 655. <https://doi.org/10.3390/cryst12050655>.
70. Nektarios Kalyvas\*, George Saatsakis, Ioannis Valais, Christina Fountzoula, Konstantinos Ninos, Ioannis Sianoudis, Athanasios Bakas, George Fountos, Ioannis Kandarakis, George Panayiotakis, Christos Michail "Study of UV interactions on PMMA based ZnCuInS/ZnS quantum dot films" *Optical Materials* 129 (2022) 112493. <https://doi.org/10.1016/j.optmat.2022.112493>
71. Linardatos, Dionysios, Michail, Christos, Kalyvas, Nektarios, Ninos, Konstantinos, Bakas, Athanasios, Valais, Ioannis, Fountos, George, Kandarakis, Ioannis "Luminescence Efficiency of Cerium Bromide Single Crystal under X-ray Radiation", *Crystals* 12(7), Article number 909, 2022, DOI 10.3390/cryst12070909
72. Stavros Tseremoglou, Christos Michail, Ioannis Valais, Konstantinos Ninos, Athanasios Bakas, Ioannis Kandarakis, George Fountos and Nektarios Kalyvas\*, "Evaluation of Cerium-Doped Lanthanum Bromide (LaBr<sub>3</sub>:Ce) Single-Crystal Scintillator's Luminescence Properties under X-ray Radiographic Conditions" *Appl. Sci.* 2023, 13, 419. <https://doi.org/10.3390/app13010419>.
73. Vasileios Ntoupis, Dionysios Linardatos, George Saatsakis, Nektarios Kalyvas, Athanasios Bakas, George Fountos, Ioannis Kandarakis, Christos Michail and Ioannis Valais "Response of Lead Fluoride (PbF<sub>2</sub>) Crystal under X-ray and Gamma Ray Radiation" *Photonics* 2023, 10, 57. <https://doi.org/10.3390/photonics10010057>.
74. Nektarios Kalyvas, Anastasia Chamogeorgaki, Christos Michail, Aikaterini Skouroliaou, Panagiotis Liaparinis, Ioannis Valais, George Fountos and Ioannis Kandarakis "A Novel Method

- to Model Image Creation Based on Mammographic Sensors Performance Parameters: A Theoretical Study" *Sensors* 2023, 23, 2335. <https://doi.org/10.3390/s23042335>.
75. Marios K. Tzomakas, Vasiliki Peppas, Antigoni Alexiou, Georgios Karakatsanis, Anastasios Episkopakis, Christos Michail, Ioannis Valais, George Fountos, Nektarios Kalyvas, Ioannis S. Kandarakis "A phantom based evaluation of the clinical imaging performance of electronic portal imaging devices" Volume 9, Issue 10, October 2023, e21116, <https://doi.org/10.1016/j.heliyon.2023.e21116>
  76. Tseremoglou, Stavros, Christos Michail, Ioannis Valais, Konstantinos Ninou, Athanasios Bakas, Ioannis Kandarakis, George Fountos, and Nektarios Kalyvas "Optical Photon Propagation Characteristics and Thickness Optimization of LaCl<sub>3</sub>:Ce and LaBr<sub>3</sub>:Ce Crystal Scintillators for Nuclear Medicine Imaging" *Crystals* 2024 14, no. 1: 24. <https://doi.org/10.3390/cryst14010024>
  77. Michail C, Liaparinos P, Kalyvas N, Kandarakis I, Fountos G, Valais I. Phosphors and Scintillators in Biomedical Imaging. *Crystals*. 2024; 14(2):169. <https://doi.org/10.3390/cryst14020169>

***Indicative Contributions in Scopus Referenced publications and book of Proceedings of International Conferences***

1. Kalivas N., Kateris A., Tsoukos S., Cavouras D., Kandarakis I., Nomicos C. and Panayiotakis G, 1997 "Modeling quantum noise in radiographic phosphor screens" Proceedings of the 2<sup>nd</sup> Regional Mediterranean Congress on Radiation Protection, pg 84-87, Tel-Aviv, Israel, 1997.
2. David S., Michail C., Valais I., Nikolopoulos D., Kalivas N., et al.: "Luminescence efficiency of Lu<sub>2</sub>SiO<sub>5</sub>:Ce (LSO) powder scintillator for X-ray medical radiography applications". IEEE Nuclear Science Symposium Conference Record, 2, 1178-1182, 2006
3. Michail C., David S., Toutountzis A., Valais I., Panayiotakis G., Fountos G., Kalyvas N. and Kandarakis I.: "A comparative investigation of Lu<sub>2</sub>SiO<sub>5</sub>:Ce and Gd<sub>2</sub>O<sub>2</sub>S:Eu phosphor scintillators for use in a medical imaging detector" Proceedings of the IEEE International Workshop on Imaging Systems and Techniques-IST2008, Chania Greece, September 10-12, 2008.
4. N. I. Kalyvas, C. Michail, G. Fountos, I. Valais, P. Liaparinos, I. Seferis, V. Spyropoulou, A. Mytafidis, G. Panayiotakis, I. Kandarakis "Modeling Noise Properties of a High Resolution CMOS Detector for X-Ray Digital Mammography" 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference, pp 2465-2470, DOI: 10.1109/NSSMIC.2011.6152669, 2011
5. G. Valais, G. P. Fountos, C. M. Michail, I. Seferis, N. I. Kalyvas, A. K. Mytafidis, I. S. Kandarakis, G. S. Panayiotakis "Thin Substrate Powder Scintillator Screens for Use in Digital X-ray Medical Imaging Applications" 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference, pp 2997-3000, DOI: 10.1109/NSSMIC.2011.6152537, 2011.

6. I. E. Seferis, N. I. Kalyvas, I. G. Valais, C. M. Michail, P. F. Liaparinos, G. P. Fountos, E. Zych, I. S. Kandarakis and G. S. Panayiotakis “Light emission efficiency of Lu<sub>2</sub>O<sub>3</sub>:Eu nanophosphor scintillating screen under x-ray radiographic conditions.” Medical Imaging 2013: Physics of Medical Imaging, edited by Robert M. Nishikawa, Bruce R. Whiting, Christoph Hoeschen, Proc. of SPIE Vol. 8668, 86683W · © 2013 SPIE · CCC code: 1605-7422/13/\$18 · doi: 10.1117/12.2015265.
7. I.E. Seferis, C.M. Michail, S.L. David, A. Bakas, N.I. Kalivas, G.P. Fountos, G.S. Panayiotakis, K. Kourkoutas, I.S. Kandarakis, and I.G. Valais “Light Emission Efficiency of Gd<sub>3</sub>Al<sub>2</sub>Ga<sub>3</sub>O<sub>12</sub>:Ce (GAGG:Ce) Single Crystal Under X-ray Radiographic Conditions” L.M. Roa Romero (ed.), XIII Mediterranean Conference on Medical and Biological Engineering and Computing 2013, IFMBE Proceedings 41, 455 DOI: 10.1007/978-3-319-00846-2\_113, © Springer International Publishing Switzerland 2014.
8. N. Martini, V. Koukou, N. Kalyvas, P. Sotiropoulou, C. Michail, I. Valais, I. Kandarakis, G. Nikiforidis, G. Fountos, “Modeling indirect detectors for performance optimization of a digital mammographic detector for dual energy applications” (IC-MSQUARE 2014), Journal of Physics: Conference Series Volume 574, Article number 012075, doi:10.1088/1742-6596/574/1/012075
9. I. E. Seferis, C. M. Michail, I. G. Valais, Panagiotis F. Liaparinos, Nektarios I. Kalyvas, G. P. Fountos, Eugeniusz Zych, I. S. Kandarakis, George Panayiotakis, Imaging performance of a thin Lu<sub>2</sub>O<sub>3</sub>:Eu nanophosphor scintillating screen coupled to a high resolution CMOS sensor under X-ray radiographic conditions: comparison with Gd<sub>2</sub>O<sub>2</sub>S:Eu conventional phosphor screen. Proceedings of SPIE Volume 9033, 2014, Article number 90333T, Progress in Biomedical Optics and Imaging - <http://dx.doi.org/10.1117/12.2042150>.
10. N. Kalyvas and P. Liaparinos, Comparing analytical and Monte Carlo optical diffusion models in phosphor-based X-ray detectors, Proc. SPIE 9033, Medical Imaging 2014: Physics of Medical Imaging, 90333W (19 March 2014); doi: 10.1117/12.2042148
11. G Karpetas, C Michail, G Fountos, N Kalyvas, I Valais, I Kandarakis, G Panayiotakis, A Novel Method for the Image Quality assessment of PET Scanners by Monte Carlo simulations: Effect of the scintillator, International Conference on Mathematical Modeling in Physical Sciences, 2013, Journal of Physics: Conference Series Volume 490, Issue 1, 2014, Article number 012139
12. C.M. Michail, G.E. Karpetas, G.P. Fountos, N.I.Kalyvas, N. Martini, V. Koukou, I.G. Valais and I.S. Kandarakis, Medical Imaging Image Quality Assessment with Monte Carlo Methods, 4<sup>th</sup> International Conference on Mathematical Modeling in Physical Sciences, 2015, Journal of Physics: Conference Series Volume 633, 2015, Article number 012096
13. N Kalyvas, N Martini, V Koukou, C Michail, P Sotiropoulou, I Valais, I Kandarakis and G Fountos, A theoretical investigation of spectra utilization for a CMOS based indirect detector for dual energy applications, 4<sup>th</sup> International Conference on Mathematical Modeling in Physical Sciences, 2015, Journal of Physics: Conference Series Volume 633, 2015, Article number 012095.

14. N Martini, V Koukou, C Michail, P Sotiropoulou, N Kalyvas, I Kandarakis, G Nikiforidis and G Fountos, Modeling of the Calcium/Phosphorus Mass ratio for Breast Imaging, 4<sup>th</sup> International Conference on Mathematical Modeling in Physical Sciences, 2015, Journal of Physics: Conference Series Volume 633, 2015, Article number 012094.
15. V. Koukou, N Martini, C Michail, P Sotiropoulou, N Kalyvas, I Kandarakis, G Nikiforidis and G Fountos, Optimum filter selection for Dual Energy X-ray Applications through Analytical Modeling, 4<sup>th</sup> International Conference on Mathematical Modeling in Physical Sciences, 2015, Journal of Physics: Conference Series Volume 633, 2015, Article number 012093.
16. I.E. Seferis, J. Zeler, C. Michail, G. Fountos, N.Kalyvas, A. Bakas, I. Kandarakis, G.S. Panayiotakis E. Zych, Preparation and imaging performance of nanoparticulated LuPO<sub>4</sub> semitransparent films under X-ray radiation, SPIE Micro+Nano Materials, Devices, and Applications Symposium; University of Sydney's Camperdown Campus Sydney; Australia; 6 December 2015 through 9 December 2015; Code 119433, Proceedings of SPIE - The International Society for Optical Engineering, Volume 9668, 2015, Article number 96682H.
17. Stratos David, Christos Michail, Ioannis Valais, Nektarios Kalyvas, Ioannis Seferis, Athanasios Bakas, Alexander Gektin and Ioannis Kandarakis "Luminescent and scintillation properties of Gd<sub>3</sub>Al<sub>2</sub>Ga<sub>3</sub>O<sub>12</sub>:Ce (GAGG) crystals under X-ray excitation." page 67 in the Proceedings of the SCinTE 2015 international conference Athens, Greece / November 5-7, 2015: ISBN: 978-960-98739-8-7 Volume 3: ISBN: 978-618-5208-03-5 (<http://www.scinte.gr/proceedings.php>).
18. Stratos David, Christos Michail, Ioannis Valais, Nektarios Kalyvas, Athanasios Bakas, Alexander Gektin, Ioannis Kandarakis and Kostantinos Kourkoutas "Investigation of luminescence properties of Lutetium Fine Silicate (LFS-3) scintillation crystals under X-ray radiographic conditions" page 71 in the Proceedings of the SCinTE 2015 international conference Athens, Greece / November 5-7, 2015: ISBN: 978-960-98739-8-7 Volume 3: ISBN: 978-618-5208-03-5 (<http://www.scinte.gr/proceedings.php>).
19. Kapetanakis, I., Fountos, G., Michail, C., Valais, I., Kalyvas, N. «3D printing X-Ray Quality Control Phantoms. A Low Contrast Paradigm» (2017) Journal of Physics: Conference Series, 931 (1), art. no. 012026, DOI: 10.1088/1742-6596/931/1/012026.
20. Koukou, V., Martini, N., Valais, I., Bakas, A., Kalyvas, N., Lavdas, E., Fountos, G., Kandarakis, I., Michail, C. «Resolution Properties of a Calcium Tungstate (CaWO<sub>4</sub>) Screen Coupled to a CMOS Imaging Detector» (2017) Journal of Physics: Conference Series, 931 (1), art. no. 012027, . DOI: 10.1088/1742-6596/931/1/012027.
21. Seferis, I.E., Michail, C., Zeler, J., Valais, I., Fountos, G., Kalyvas, N., Bakas, A., Kandarakis, I., Zych, E., Panayiotakis, G.S. «X-ray imaging resolution of phosphor screens prepared with different grains size and shape of granular Lu<sub>2</sub>O<sub>3</sub>:Eu» (2017) Journal of Physics: Conference Series, 931 (1), art. no. 012032. DOI: 10.1088/1742-6596/931/1/012032.

22. C.M. Michail, K. N. Agavanakis, G.E. Karpetas, N.I. Kalyvas, I.G. Valais, I.S. Kandarakis, G.S. Panayiotakis, G.P. Fountos, "Information Content in Nuclear Medicine", Energy Procedia 157, 1517-1524, 2019.
23. George Saatsakis, Christos Michail, Christina Fountzoul, Athanasios Bakas, Nektarios Kalyvas, Konstantinos Ninos, George Fountos, Ioannis Kandarakis, Ioannis Valais and George Panayiotakis "Poly(Methyl Methacrylate) Structure Modification through Zn-Cu-In-S / ZnS Quantum Dot Nanocrystals Dispersion" Procedia Structural Integrity 25 (2020) 47–54.
24. A Konstantinidis, N Martini, V Koukou, G Fountos, N Kalyvas, I Valais and C Michail "RAD\_IQ: A free software for characterization of digital X-ray imaging devices based on the novel IEC 62220-1-1:2015 International Standard", Journal of Physics: Conference Series 2090 (2021) 012107 doi:10.1088/1742-6596/2090/1/012107
25. Linardatos Dionysios, Revi Dafni, Ntoupis Vasileios, Kalyvas Nektarios, Ninos Konstantinos, Bakas Athanasios, Lavdas Eleftherios, Kandarakis, Ioannis, Fountos George, Valais Ioannis, Michail Christos "Temperature dependence of ZnSe:Te scintillator" Procedia Structural Integrity 41, Issue C, Pages 82 - 86, 2022, DOI 10.1016/j.prostr.2022.05.010
26. A. Galanopoulou, A. Katsigiannis, A. Bakas, C. Kantsos, C. Michail, K. Ninos, L. Lavdas, V. Koukou, N. Martini, I. Valais, G. Fountos, I. Kandarakis, N. Kalyvas "EFFECT OF READER SOFTWARE IN IMAGE QUALITY METRICS OF X-RAY COMPUTED RADIOGRAPHY SYSTEMS" Proceedings of RAP 2022 Conference Pages: 86–90, DOI: 10.37392/RapProc.2022.20, <https://www.rap-proceedings.org/papers/RapProc.2022.20.pdf>.
27. Dionysios Linardatos, Vasileios Ntoupis, Stavros Tseremoglou, Ioannis Valais, Konstantinos Ninos, Athanasios Bakas, Eleftherios Lavdas, Ioannis Kandarakis, Nektarios Kalyvas, George Fountos and Christos Michail "Light output dependence of CeBr<sub>3</sub> hygroscopic scintillator upon temperature", Procedia Structural Integrity 47 (2023) 80–86, 10.1016/j.prostr.2023.06.043.
28. Stavros Tseremoglou, Vasileios Ntoupis, Dionysios Linardatos, Ioannis Valais, Christos Michail, Athanasios Bakas, Konstantinos Ninos, Eleftherios Lavdas, Ioannis Kandarakis, George Fountos and Nektarios Kalyvas "Temperature Dependence of the Luminescence Output of LaCl<sub>3</sub>:Ce Single Crystal Scintillator", Procedia Structural Integrity 47 (2023) 119–124, 10.1016/j.prostr.2023.07.002
29. Nektarios Kalyvas, Marios K. Tzomakas, Vasiliki Peppas, Antigoni Alexiou, Georgios Karakatsanis, Anastasios Episkopakis, Christos Michail, Ioannis Valais, George Fountos, Ioannis S. Kandarakis "TOWARDS THE IMPLEMENTATION OF A PHANTOM FOR THE LOW CONTRAST EVALUATION OF ELECTRONIC PORTAL IMAGING DETECTORS (EPID): A THEORETICAL STUDY" RAP 2023 Conference Proceedings, 1-4, 2023, DOI: 10.37392/RapProc.2023.01
30. Marios K. Tzomakas, Vasiliki Peppas, Antigoni Alexiou, Georgios Karakatsanis, Anastasios Episkopakis, Christos Michail, Ioannis Valais, George Fountos, Ioannis S. Kandarakis, Nektarios Kalyvas "IMAGE

QUALITY IMPACT OF DIFFERENT PHOSPHOR ACTIVATOR MATERIALS IN Gd<sub>2</sub>O<sub>3</sub> BASED EPID SYSTEMS" RAP 2023 Conference Proceedings, 60-64, 2023, DOI: 10.37392/RapProc.2023.13.