

Pavel Muzhikyan

Ashtarak-2, Aragatsotn region, 0204, Republic of Armenia

Phone: +37491294037 | email: pmuzhikyan@gmail.com

EDUCATION

Institute for Physical Research, NAS RA

PhD in Laser Physics

Ashtarak, Armenia

June 2008 – July 2011

Dissertation: Spectroscopic Investigations of $Y_3Al_5O_{12}$ and $LiNbO_3$
Laser Crystals Doped with Er^{3+} , Yb^{3+} and Ce^{3+} ions.

Yerevan State University

Master of Science in Physics of Semiconductors and Microelectronics

Yerevan, Armenia

Sept. 2006 – May 2008

Thesis: Automation of Luminescence Decay Measurements of $LiNbO_3$
Laser Crystal by LabView Software Package

Yerevan State University

Bachelor of Science in Radiophysics

Yerevan, Armenia

Sept. 2002 – May 2006

Thesis: Development of Titanium Oxide Film Growth Technology
by Anodization Method for Gas Sensors

WORK/RESEARCH EXPERIENCE

Institute for Physical Research, NAS RA

Deputy Director

Ashtarak, Armenia

Mar. 2021 – present

Scientific Secretary

Jan. 2019 – Feb. 2021

Senior Researcher

Jan. 2018 – present

Junior Researcher

Sept. 2011 – Dec. 2017

Laboratory Assistant

Oct. 2007 – Sept. 2011

Yerevan State University

Laboratory Assistant

Yerevan, Armenia

Jan. 2007 – Sept. 2007

GRANTS

SCS 20DP-2B02

2020

An innovative concept for object tracking by using thermal sensors

ISTC #A-2244

2017

Optical sensor with a radially-quadratic transmission filter

SCS 13-1C269

2013

Highly effective near infrared lasers based on the $YAG:Er^{3+},Ce^{3+}$ monocrystals: research and development

ANSEF PS OPT-2917

2012

Improving the efficiency of the optical excitation of $YAG:Er^{3+}$ crystals for 1.55 μm wavelength generation

ANSEF PS OPT-2565

2011

Solid state optical refrigerators on base of Yb^{3+} -doped crystals

NFSAT -CRDF ECSP – 09 - 57_ GRSP GRANT

2010

Design of optical superlattices in nonlinear materials for miniature multiwave laser devices

AWARDS AND INTELLECTUAL PROPERTIES

- Best young scientist report winner on Int. conf. "Laser Physics 2010"
- Artur Martirosyan, Radik Kostanyan, Pavel Muzhikyan. 2018. Inhomogeneous filter of light power transmittance and determination method for light beam integral characteristics. Armenian Patent 3168, filed November 15, 2017, and issued March 16, 2018.

SKILLS

Research Skills: Laser spectroscopy, time-resolved measurements, energy transfer mechanisms

Computer skills: OriginLab, LabView, Wolfram Mathematica, Photoshop

Language skills: Armenian (native), English (advanced), Russian (advanced)

PUBLICATIONS

Martirosyan, A.E., Muzhikyan, P.H., Martirosyan, V.A. et al. A Comprehensive Theory on Gain and Field of View of Conical Horn for Sensing Applications in the Optical and THz Ranges. *Sens Imaging* 25, 28 (2024)

Martirosyan, A.E., Kostanyan, R.B., Martirosyan, V.A. et al. Long Range and Wide Field of View Thermal Detection Miniature System with a Conical Horn. *Sens Imaging* 24, 41 (2023)

V. S. Arakelyan, T. I. Butaeva, P. H. Muzhikyan, D. G. Zargaryan, and R. B. Kostanyan, Structure of the R1 and R2 Bands of Isotopes of Cr³⁺ Ion in a Single Crystal of Ruby at Room Temperature, *Optics and Spectroscopy* 129, 543–554 (2021)

V. A. Martirosyan and P. H. Muzhikyan, Gain properties of a conical horn in the optical region, *Applied Appl. Opt.* 60, 5382-5386 (2021)

A. E. Martirosyan, R. B. Kostanyan, P. H. Muzhikyan, H. H. Azizbekyan, and D. G. Zargaryan, "Optical monitoring of a two-substance structured area with nonmatrix detectors," *Appl. Opt.* 59, 3624-3629 (2020).

A. E. Martirosyan, R. B. Kostanyan, P. H. Muzhikyan, and H. H. Azizbekyan, "Nonconventional concept for continuous reproduction of target movement," *Appl. Opt.* 59, 7279-7283 (2020).

A. Martirosyan, R. Kostanyan, P. Muzhikyan, and H. Azizbekyan, "Alternative approach for optical monitoring of arbitrarily distributed substances," *Applied Optics*, Vol. 57, (2018), 9944-9950.

Radik Kostanyan, Pavel Muzhikyan, Davit Zargaryan, Gagik Demirkhanyan, Electronic excitation energy transfer processes in Er:YAG under variable pump duration, *Optical Materials*, Vol. 83, (2018), pp. 55-60.

N. R. Aghamalyan, R. B. Kostanyan, R. K. Hovsepian, P. H. Muzhikyan, and M. N. Nersisyan. "Intensities of Optical Transitions of Nd³⁺ Ions in Pb(MoO₄)_x(WO₄)_{1-x} Crystals". *Journal of Contemporary Physics (Armenian Academy of Sciences)*, Vol. 51, Issue 3, (2016), pp. 276-283.

Vahan Gevorg Babajanyan, Radik Benik Kostanyan, Pavel Hrachya Muzhikyan. "Spectral and kinetic peculiarities of the radiation trapping effect in doped materials". *Optical Materials*, Vol 45, (2015), pp. 215-218.

V. G. Babajanyan, R. B. Kostanyan, P. H. Muzhikyan. "Influence of radiation trapping on the characteristics of IR luminescence of YAG:Er³⁺ crystal". *Journal of Contemporary Physics (Armenian Academy of Sciences)*, Vol. 50, Issue 1, (2015), pp 49-54.

P.H. Muzhikyan, V.G. Babajanyan, R.B. Kostanyan, A.G. Petrosyan. "Er,Ce:Y₃Al₅O₁₂ crystal properties under UV, VIS, and IR radiation exposure." *Proc. of SPIE* vol. 8621, (2013), p. 86210A.

V.G. Babajanyan R.B. Kostanyan, P.H. Muzhikyan. "Evidence of multiparticle optical centers in LiNbO₃:Er³⁺-Yb³⁺ crystal". *International Journal of Modern Physics: Conf. Series*, v.15 , (2012), pp.85-90.

V.G. Babajanyan, R.B. Kostanyan, P.H. Muzhikyan. "Luminescence kinetics of LiNbO₃:Yb³⁺-Er³⁺, LiNbO₃:Er³⁺ and LiNbO₃:Yb³⁺ crystals under selective excitations in the impurity subsystem". *Journal of Contemporary Physics (Armenian Academy of Sciences)*, Vol. 47, Issue 1, (2012), pp 17-22.

V. G. Babajanyan, R. B. Kostanyan and P. H. Muzhikyan. "Energy transfer processes in YAG crystal". J Phys.: Conf. Series, v.350 012024, (2012), (6p).

P. H. Muzhikyan. "Photoluminescence of LiNbO₃ crystals doped with Er³⁺ and Yb³⁺ ions". Journal of Contemporary Physics (Armenian Academy of Sciences), Vol. 46, Issue 1, (2011), pp. 17-22.

V. G. Babajanyan, R. B. Kostanyan, P. H. Muzhikyan, A. G. Petrosyan "Absorption and photoluminescence of YAG:Er³⁺, YAG:Ce³⁺ and YAG:Er³⁺-Ce³⁺ crystals". Journal of Contemporary Physics (Armenian Academy of Sciences), Vol. 46, Issue 2, (2011), pp. 54-57.

V. Babajanyan, G. Demirkhanyan, R. Kostanyan, P. Muzhikyan, R. Sargsyan. "Dependences of Upconversion and Conventional Luminescence on Pump Intensity in LiNbO₃:Er³⁺ and LiNbO₃:Yb³⁺-Er³⁺ Crystals". Proc. of SPIE vol. 7998, (2011), pp. 799806-1-799806-6.

V. Babajanyan, R. Kostanyan, P. Muzhikyan, A. Petrosyan, R. Sargsyan. "Influence of Ce³⁺ Sensitizers on Spectroscopic Properties of Er³⁺ Ions in YAG:Ce³⁺-Er³⁺ Crystals". Proc. of SPIE vol. 7998, (2011), pp. 799803-1-799803-6.

V. Babajanyan, G. Demirkhanyan, R. Kostanyan, P. Muzhikyan and R. Sargsyan. "Electronic Excitation Energy Transfer in LiNbO₃:Yb³⁺-Er³⁺ Crystals". Proc. of 7-Int. Conf ICSMN-2009, Yerevan, (2009), pp. 133-136.