





## LIST OF PUBLICATIONS

### 1. PAPERS PUBLISHED IN PEER-REVIEW JOURNALS

71. A. Broasca, M. Greculeasa, F. Voicu, S. Hau, **C. Gheorghe**, G. Croitoru, N. Pavel, G. Stanciu, A. Petris, P. Gheorghe, F. Albota, A. Serban, L. Gheorghe, "LGYSB:Nd - high-performance lasing in the near-infrared region," *J. Am. Chem. Soc.* **146**(3), 2196-2207 (2024).
70. A. M. Voiculescu, S. Hau, G. Stanciu, **C. Gheorghe** , "Effects of  $\text{Eu}^{3+}$  concentration on the thermoluminescence properties of narrow-band red-emitting  $\text{Eu}^{3+}:\text{SrLaGaO}_4$  phosphor," *J. Alloys & Compds.* **958**, 170507 (2023).
69. A. D. Timoshenko, O. O. Matvienko, A. G. Doroshenko, S. V. Parkhomenko, I. O. Vorona, O. S. Kryzhanovska, N. A. Safronova, O. O. Vovk, A. V. Tolmachev, V. N. Baumer, I. Matolínova, S. Hau, **C. Gheorghe**, R. P. Yavetskiy, "Highly-doped  $\text{YAG}:\text{Sm}^{3+}$  transparent ceramics: Effect of  $\text{Sm}^{3+}$  ions concentration," *Ceram. Int.* **49**(5), 7524-7533 (2023).
68. A. Broasca, M. Greculeasa, F. Voicu, **C. Gheorghe** and L. Gheorghe, "Pure and Yb-Doped  $\text{La}_x\text{Y}_y\text{Sc}_{4-x-y}(\text{BO}_3)_4$  Crystals: A Review of Recent Advances," *Crystals* **13**(2), 169 (2023).
67. **C. Gheorghe**, S. Hau, L. Gheorghe, F. Voicu, M. Greculeasa, A. Broasca, and G. Stanciu, " $\text{RE}^{3+}$ -Doped  $\text{Ca}_3(\text{Nb,Ga})_5\text{O}_{12}$  and  $\text{Ca}_3(\text{Li,Nb,Ga})_5\text{O}_{12}$  Crystals (RE = Sm, Dy, and Pr): A Review of Current Achievements," *Materials* **16**(1), 269 (2023).
66. S. Hau, G. Stanciu, D. Avram, L. Gheorghe, **C. Gheorghe** , "Energy transfer and luminescent properties of  $\text{Tb}^{3+}$  and ( $\text{Tb}^{3+}$ ,  $\text{Yb}^{3+}$ ) doped CNGG phosphors," *J. Rare Earths* **40**(9), 1445-1453 (2022).
65. **C. Gheorghe**, S. Hau, G. Stanciu, D. Avram, A. Broasca, L. Gheorghe, "Novel optical temperature sensors based on the emission of the  $\text{Pr}^{3+}$  ions doped  $\text{Ca}_3(\text{M,Ga})_5\text{O}_{12}$  ( $\text{M}^{5+} = \text{Nb, Ta}$ ) garnet phosphors," *J. Alloys & Compds.* **922**, 166178 (2022).
64. A. Broasca, M. Greculeasa, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, L. Gheorghe, " $\text{Pr}:\text{LGSB}$  as a new nonlinear optical crystal: Czochralski growth and optical characterization," *J. Alloys & Comp.* **908**, 164633 (2022).
63. A. Broasca, M. Greculeasa, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, C. A. Brandus, N. Pavel, M. Enculescu, L. Gheorghe, "Growth and characterization of 3.5 at.% Nd:LGSB bifunctional crystal," *Opt. Mat.* **123**, 111832 (2022).
62. A. M. Voiculescu, S. Hau, G. Stanciu, D. Avram, **C. Gheorghe** , "Optical thermometry through infrared excited green upconversion emissions of  $\text{Er}^{3+}$ - $\text{Yb}^{3+}$  co-doped  $\text{LaAlO}_3$  phosphors," *J. Lumin.* **242**, 118602 (2022).
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60. G. Stanciu, F. Voicu, C. A. Brandus, C. E. Tihon, S. Hau, **C. Gheorghe**, G. Croitoru, L. Gheorghe, M. Dumitru, "Enhancement of the laser emission efficiency of  $\text{Yb}:\text{Y}_2\text{O}_3$  ceramics via multi-step sintering method fabrication," *Opt. Mater.* **109**, 110411 (2020).
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57. L. Gheorghe, A. Broasca, M. Greculeasa, F. Voicu, G. Stanciu, S. Hau, G. Croitoru, C. A. Brandus, **C. Gheorghe**, F. Khaled, P. Loiseau, G. Aka, "Czochralski-grown  $\text{La}_x\text{Gd}_y\text{R}_z\text{Sc}_{4-x-y-z}(\text{BO}_3)_4$  (R = Yb, Nd) crystals - A review of recent developments," *Opt. Mat. X* **7**, 100052 (2020).
56. C. A. Brandus, S. Hau, A. Broasca, M. Greculeasa, F. M. Voicu, **C. Gheorghe**, L. Gheorghe, and T. Dascalu, "Efficient 1  $\mu\text{m}$  Laser Emission of Czochralski-Grown Nd:LGSB Single Crystal," *Materials* **12**(12), 2005 (2019).
55. S. Hau, **C. Gheorghe** , L. Gheorghe, F. Voicu, M. Greculeasa, G. Stanciu, A. Broasca, M. Enculescu, "Spectroscopic investigations of  $\text{Pr}^{3+}$  ions doped CNGG and CLNGG single crystals," *J. Alloy. Compd.* **799**, 288-301 (2019).
54. G. Stanciu, L. Gheorghe, F. Voicu, S. Hau, **C. Gheorghe**, G. Croitoru, M. Enculescu, and R.P. Yavetskiy, "Highly transparent  $\text{Yb}:\text{Y}_2\text{O}_3$  ceramics obtained by solid-state reaction and combined sintering procedures," *Ceram. Int.* **45**(3), 3217-3222 (2019).
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51. **C. Gheorghe**, S. Hau, L. Gheorghe, F. Voicu, M. Greculeasa, M. Enculescu, K. N. Belikov, E. Yu. Bryleva, O. V. Gaiduk, "Yellow laser potential of cubic  $\text{Ca}_3(\text{Nb,Ga})_5\text{O}_{12}:\text{Dy}^{3+}$  and  $\text{Ca}_3(\text{Li,Nb,Ga})_5\text{O}_{12}:\text{Dy}^{3+}$  single crystals," *J. Alloy. Compd.* **739**, 806-816 (2018).
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48. V. Lupei, A. Lupei, S. Hau, **C. Gheorghe**, A. Ikesue, "Structural and electron-phonon interaction effects in optical spectra of  $\text{Pr}^{3+}$  and  $\text{Sm}^{3+}$  in YAG," *J. Alloy. Compd.* **706**, 176-185 (2017).
47. F. Khaled, P. Loiseau, F. Voicu, A. Achim, S. Hau, **C. Gheorghe**, G. Croitoru, N. Pavel, L. Gheorghe, G. Aka, "Spectroscopic properties and laser performances of  $\text{Yb}:\text{LGSB}$  nonlinear optical crystal," *J. Alloy. Compd.* **688**, 510-517 (2016).
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45. V. Lupei, A. Lupei, **C. Gheorghe**, and A. Ikesue, "Spectroscopic and de-excitation properties of (Cr,Nd):YAG transparent ceramics," *Opt. Mat. Express* **6**(2), 552-557 (2016).
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42. **C. Gheorghe**, L. Gheorghe, A. Achim, S. Hau, R. D. Avram, G. Stanciu, "Optical properties of  $\text{Sm}^{3+}$  doped strontium hexa-aluminate single crystals," *J. Alloy. Compd.* **622**, 296-302 (2015).
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35. L. Gheorghe and **C. Gheorghe**, "Judd-Ofelt analysis and laser investigations of Nd<sup>3+</sup>-doped Gd<sub>1-x</sub>Sc<sub>x</sub>Ca<sub>4</sub>O(BO<sub>3</sub>)<sub>3</sub> single crystal," *Optoelectronics and Advanced Materials - Rapid Communications* **6** (3-4), 374-382 (2012).
34. V. Lupei, A. Lupei, A. Ikesue, **C. Gheorghe**, L. Gheorghe, A. Achim, "Crystal field disorder effects in the optical spectra of Nd<sup>3+</sup> and Yb<sup>3+</sup>-doped CLNGG laser crystals and ceramics", *J. Appl. Phys.* **112** (6), 063110, 2012.
33. **C. Gheorghe**, A. Lupei, F. Voicu, M. Enculescu, "Sm<sup>3+</sup>- doped Sc<sub>2</sub>O<sub>3</sub> polycrystalline ceramics: spectroscopic investigation," *J. Alloy. Compd.* **535**, 78-82 (2012).
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16. A. Achim, L. Gheorghe, V. Lupei, A. Lupei, **C. Gheorghe**, "Co-doping effects on SrWO<sub>4</sub>: Nd<sup>3+</sup> crystals for RAMAN lasers," JOAM **10** (6), 1353-1356 (2008).
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## **2. PROCEEDINGS OF INTERNATIONAL CONFERENCES**

(Presentations at International Meetings published in extended version)

8. F. Voicu, **C. Gheorghe**, C. Florica, "Preliminary Study in Preparation of Nd<sup>3+</sup>:YAG and Sm<sup>3+</sup>:Y<sub>2</sub>O<sub>3</sub> Transparent Ceramics," *Analele Universității de Vest din Timișoara, Seria Fizică*, **56**, 76-80 (2012).
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112. G. Stanciu, F. Voicu, C. A. Brandus, C. E. Tihon, S. Hau, **C. Gheorghe**, G. Croitoru, L. Gheorghe, N. Pavel, "Rare-earths doped Y<sub>2</sub>O<sub>3</sub> laser materials," International Conference on Crystal Growth and Epitaxy - ICCGE-20, 30 July - 04 August 2023, Naples, Italy; (poster presentation PS 2 - P30).
111. **C. Gheorghe**, S. Hau, A. Broasca, M. Greculeasa, F. Voicu, M. Enculescu, L. Gheorghe, "Ca<sub>3</sub>(Ta,Ga)<sub>5</sub>O<sub>12</sub>:Pr<sup>3+</sup> as potential laser crystal emitting in the blue and red spectral domains," International Conference on Crystal Growth and Epitaxy - ICCGE-20, 30 July - 04 August 2023, Naples, Italy; (poster presentation PS 3 - P15).
110. A. Broasca, M. Greculeasa, F. Voicu, S. Hau, G. Stanciu, **C. Gheorghe**, G. Croitoru, N. Pavel, L. Gheorghe, "Growth and optical properties of Nd:LYSB as a new laser and nonlinear optical borate crystal," International Conference on Crystal Growth and Epitaxy - ICCGE-20, 30 July - 04 August 2023, Naples, Italy; (oral presentation Optical Crystals 4 - O3).
109. M. Greculeasa, A. Broasca, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, G. Croitoru, N. Pavel, L. Gheorghe, "Development of LYSB and Yb-doped LYSB crystals as new candidates for the next generation of nonlinear optical and/or laser crystals," International Conference on Crystal

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106. A. Broasca, M. Greculeasa, F. Voicu, S. Hau, **C. Gheorghe**, C.A. Brandus, L. Gheorghe, "Growth and optical properties of Nd:LYSB as a new laser and nonlinear optical borate crystal," International Conference on Crystal Growth and Epitaxy (ECCGE-20), 30 July - 4 August 2023, Napoli, Italy (oral presentation - 03)
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103. G. Stanciu, F. Voicu, C. A. Brandus, C. E. Tihon, S. Hau, **C. Gheorghe**, G. Croitoru, L. M. Gheorghe, N. Pavel, "RE<sup>3+</sup>:Y<sub>2</sub>O<sub>3</sub> transparent ceramic media realized via a multi-step sintering method," The 9th Tiny Integrated Laser and Laser Ignition Conference 2022, 19-21 April 2023, Pacifico Yokohama, Yokohama, Japan, presentation TILA-LICp-02 (poster presentation).
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100. S. Hau, **C. Gheorghe**, L. Gheorghe, F. Voicu, M. Greculeasa, A. Broasca, G. Stanciu, M. Enculescu, "Spectroscopic Characterizations of Pr<sup>3+</sup> and Dy<sup>3+</sup> doped Calcium Tantalum Gallium Garnet- Ca<sub>2.85</sub>Ta<sub>1.80</sub>Ga<sub>3.10</sub>O<sub>12</sub> Single Crystals," 20th International Balkan Workshop on Applied Physics and Materials Science (IBWAP 2022), July 12-15, Constanta, Romania; presentation S1-P7.
99. A. Broasca, M. Greculeasa, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, and L. Gheorghe, "Growth and optical properties of the newly developed Pr:LGSB bifunctional crystal," 10th EPS-QEOD EUROPHOTON Conference, 28 Aug. - 2 Sept. 2022, Hannover, Germany; presentation TUE-P-1.8.
98. M. Greculeasa, A. Broasca, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, C.A. Brandus, N. Pavel, and L. Gheorghe, "Development of Czochralski-grown La<sub>0.733</sub>Nd<sub>0.035</sub>Gd<sub>0.452</sub>Sc<sub>2.75</sub>(BO<sub>3</sub>)<sub>4</sub> as a new bifunctional laser and nonlinear crystal," 10th EPS-QEOD EUROPHOTON Conference, 28 Aug. - 2 Sept. 2022, Hannover, Germany; presentation TUE-P-1.9.
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95. A. Broasca, M. Greculeasa, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, L. Gheorghe, "Czochralski Growth and Characterization of new Pr:LGSB Nonlinear Optical Crystal," International Conference on Laser, Plasma and Radiation - Science and Technology, June 7-10, 2022 Bucharest, Romania; poster presentation P2-04.
  94. A. M. Voiculescu, S. Hau, G. Stanciu, R. D. Avram, **C. Gheorghe**, "Luminescence properties and optical thermometry of  $\text{Er}^{3+}$ - $\text{Yb}^{3+}$  co-doped  $\text{LaAlO}_3$  phosphors," International Conference on Laser, Plasma and Radiation - Science and Technology, June 7-10, 2022 Bucharest, Romania; poster presentation P2-02.
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  89. G. Stanciu, F. Voicu, C.-A. Brandus, E.-C. Tihon, S. Hau, **C. Gheorghe**, G. Croitoru, L. Gheorghe, "Development of a new sintering technique for fabricating high-quality  $\text{Nd}^{3+}$ - and  $\text{Yb}^{3+}$ -doped  $\text{Y}_2\text{O}_3$  Transparent Ceramics," 2021 Conference on Lasers and Electro-Optics/Europe - European Quantum Electronics Virtual Conferences (CLEO@/Europe-EQEC 2021), 21-25 June 2021, poster presentation CE-P.4.
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  84. G. Stanciu, F. Voicu, C. A. Brandus, C. Tihon, S. Hau, **C. Gheorghe**, G. Croitoru, L. Gheorghe, "Enhancement of the laser emission efficiency of Yb:Y2O3 ceramics via multi-step sintering method fabrication," 9th EPS-QEOD Europhoton Virtual Conference, 30 August - 4 September 2020; poster presentation Tu-P1.13.

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82. A. Broasca, L. Gheorghe, M. Grecaleasa, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, G. Croitoru, N. Pavel, "Czochralski growth and characterization of pure and Yb-doped  $\text{La}_x\text{Gd}_y\text{Sc}_{4-x-y}(\text{BO}_3)_4$  nonlinear and laser crystal," OSA Laser Congress, Advanced Solid State Lasers Conference - ASSL 2019, 29 September 2019 - 03 October 2019, Vienna, Austria, poster presentation JM5A.40.
81. L. Gheorghe, M. Grecaleasa, A. Broasca, F. Voicu, G. Stanciu, S. Hau, **C. Gheorghe**, "Yb<sup>3+</sup> - doped  $\text{La}_x\text{Gd}_y\text{Sc}_{4-x-y}(\text{BO}_3)_4$  as bifunctional laser and nonlinear optical crystal," Excited States of Transitions Elements Conference - ESTE 2019, 08-13 September 2019, Kudowa Zdrój, Poland, oral presentation O-10.
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76. S. Hau, **C. Gheorghe**, L. Gheorghe, F. Voicu, M. Grecaleasa, G. Stanciu, and M. Enculescu, "Luminescence properties of Pr<sup>3+</sup> doped  $\text{Ca}_3(\text{Li},\text{Nb},\text{Ga})_5\text{O}_{12}$  single crystal," TIM 19 Physics Conference, 29 - 31 May 2019, Timisoara, Romania, poster presentation CM-P09.
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72. M. Grecaleasa, L. Gheorghe, F. Voicu, **C. Gheorghe**, S. Hau, A. M. Vlaicu, "Growth and characterization of Sm- and Dy-doped CNGG and CLNGG single crystals for laser emission in the yellow - orange spectral range," 8<sup>th</sup> EPS-QEOD EUROPHOTON CONFERENCE, Solid State, Fibre, and Waveguide Coherent Light Sources, 02-07 September, 2018, Barcelona, Spain; Europhysics Conference Abstracts Volume 42C, ISBN 979-10-96389-10-0; poster presentation ThP.41.
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