

Martin Nikl - curriculum vitae (<https://www.fzu.cz/~nikl/>)

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- 1976 - 1981 study of solid state physics at the Technical University in Prague, Faculty of Nuclear Physics and Physical Engineering, graduated summa cum laude in 1981 (title Ing.)
- 1982 - 1986 CSc.(equiv. PhD.) studies in Institute of Physics CSAV
- from 1986 – appointed in the Institute of Physics, CSAV as junior scientist
- from 1995 promoted to the senior scientist level
- from 1997 promoted to the leading senior scientist level, head of Luminescence Laboratory
- from 2008 the Chair of the Dept. of Optical Materials
- from 2012, the member and vice-chair of the Institute Board, Deputy Director for targeted research
- from 07-2015, assoc. Prof., Czech Technical University
- from 2017 Chair of the Institute Board
- from 12-2021, full Prof., Czech Technical University

Field of interest

Luminescence and scintillation materials, energy transfer and storage phenomena in scintillation mechanism, physics of defects, luminescence of excitons, nanoaggregates, quantum dots.

Awards and evaluations:

- The Prize of Czechoslovak Spectroscopic Society for young scientists in 1991
- The Prize of the AS CR for outstanding scientific results, 2003: „PbWO₄ scintillator for high energy physics. Physical description and material optimisation“.
- **Praemium Academiae 2013**, awarded by the President of Academy of Science of CR.
- Technological Agency 2015 – Prize in category “The most original project”

Selected invited stays abroad:

- Fellowship from ICTP Programme for Training and Research in Italian Laboratories, ICTP, Trieste, Italy, February 93 - August 94, IROE del CNR, Florence, Italy.
- **Visiting professor position at the Institute of Material Research, Tohoku University**, Sendai, Japan, April-September 2001; June-July 2013.
- **Visiting professor position at the Dept. of Materials Science, University of Milan-Bicocca**, Milan, Italy, March 2006-February 2008
- Visiting Professor/Distinguished Visiting Professor at Department of Physics, KMUTT, Bangkok, Thailand, 1 month in each year 2011-2015
- Visiting professor at the Shanghai Institute of Ceramics, CAS, May 11-July 11, 2014; July&November 2015

Awarded grants and projects, collaborations, patent applications:

- Coordinator of eleven domestic grant projects awarded by the Grant Agency of the Academy of Sciences and the Czech Science Foundation in the period 1995-2023. All the finished projects (10) evaluated as excellent.
- Co-director and director of four NATO Linkage grants awarded in 94-95, 97-98, 01-02, 11-13 periods, collaboration among teams in Italy, Czech Republic, Poland, Ukraine and Estonia.
- **Co-director in NATO Science for Peace grant no. 973510-Scintillators** (2000-2003), five participating teams in Italy, Czech Republic and Estonia

- Holder of more than ten projects from Ministry of Education, Youth and Sports, CR, program KONTAKT: bilateral international collaborations with Japan and China in 1998-2016. Similar number of the projects supporting bilateral collaborations with European countries, Japan and China was awarded from Czech Academy of Sciences till 2023.
- **Coordinator of EU INTAS project** (2005-7), no. 04-78-7803, seven participating teams in Ukraine, Russia, Estonia, Italy and Czech Republic.
- **Partner and Work Package leader in European projects:** (i) EU FP7 project “Luminet”, FP7-PEOPLE-2012-ITN, no. 316906 (2012-2016); (ii) **H2020 project INTELUM, H2020-MSCA-RISE-2014**, no.368921 (2015-2018); (iii) COST TD1401 project (2015-2018); (iv) **UNICORN, HORIZON-EIC-2022-PATHFINDEROPEN-01**, no. 101098649 (5/2023-4/2027); (v) Partner in industrial H2020 ECSEL JU project TAKEMI5, H2020-ECSEL-2016-2-IA, no. 737479 (2017-2019) (vi) **Partner in industrial H2020 project ID2PPAC, 2020-ECSEL-2020-1-IA**, no. 101007254 (2021-2024); (vii) **Technical Associate member of the LHCb Experiment in CERN** from 9/2023.
- **Coordinator of H2020 project ASCIMAT**, H2020-TWINN-2015 (2016-2018)
- Supervisor of H2020 MSCA Individual Fellowship, no. 895429 (10/2020 – 9/2022)
- Coordinator or scientific director of large institutional projects in home institute (FZU): (i) TA ČR, program GAMA TG01010045 (2014-2018) and TP01010035 (2020-2022); (ii) OP VVV Solid21, CZ.02.1.01/0.0/0.0/16_019/0000760 (7/2018-6/2023); (iii) **Horizon Europe, call MSCA COFUND 2021, P4F**, no. 101081515 (9/2023-8/2028).
- Collaboration with foreign and domestic (CRYTUR, Nuvia, Georadis) industry, partner in five application projects of Technological Agency of CR starting from 2011

14 national patents and 2 PCT applications (WO2016/127959 (A1) and WO2017/059832) awarded in the field of scintillation materials. Based on PCT appl. further awarded:

A) “Scintillation detector for detection of ionising radiation”, granted in USA, no. US 10,067,246 B2, 4.9.2018; in Japan, no.6381815, 10.8.2018; in South Korea no.10-1972484, 19.4.2019.

B) **“Manner Of Shortening Scintillation Response Of Luminescence Centres And Material Of Scintillator With Shortened Scintillation Response”** granted in South Korea no.10-2087857, 5.3. 2020; in China no.ZL 2016 8 0059080.5, 5.10. 2016; in Japan, no. 6885934, 17.5.2021; in USA, no.US 10,976,451 B2, 13.4. 2021; in Israel, no. 258400 (2023).

Pedagogical activities

Member of PhD study councils F-6 and F-14 at FMP Charles university. Member of PhD study council “Nuclear Engineering” and lecturer for Master and PhD students at FNSPE, Czech Technical university. Supervised 10 Diploma Thesis and 11 PhD ones of students from Czech universities so far (all successfully defended).

Other activities:

Chairman of international conferences LUMDETR2003, ISLNOM-4 and LUMDETR2018 held in September 2003, June 2006 and September 2018, respectively, in Prague, Czech Republic. Vice chairman of ICDIM2012 conference, June 2012, Santa Fe, USA.

Member of the Advisory committees of LUMDETR, SCINT, ISLNOM, Eurodim and ICDIM international conferences.

Editorial Board member: Optical Materials (Elsevier), Editor of special issues of IEEE TNS journal. Referee for journals of Wiley-VCh, Elsevier, IoP UK, RSC, APS and ACS Publishers.

As of March 2024, **author and co-author of 882 papers in the refereed impacted international journals**, 59 papers in non-impacted journals, eleven chapters in books, one book and 66 papers in conference proceedings. Author and co-author of 54 invited keynote and plenary lectures at International Conferences and Workshops. **The publications received more than 19600 citations** (Scopus, auto-citations excluded), Hirsch factor, H=70.

Publication of breakthrough results and selected review papers

S.Baccaro, P.Boháček, B.Borgia, A.Cecilia, I.Dafinei, M.Diemoz, M.Ishii, O.Jarolimek, M.Kobayashi, M.Martini, M.Montecchi, M.Nikl, K.Nitsch, Y.Usuki, A.Vedda: <i>Influence of La-doping on radiation hardness and thermoluminescence characteristics of PbWO₄</i> . phys.stat.sol.(a) 160 (1997) R5-R6	Discovery of radiation hard PbWO ₄ scintillator for high energy physics applications (leading& corresponding author, 96 citations in Scopus)
M.Nikl, P.Bohacek, K.Nitsch, E.Mihokova, M.Martini, A.Vedda, S.Crocci, G.P.Pazzi, P.Fabeni, S.Baccaro, B.Borgia, I.Dafinei, M.Diemoz, , G.Organtini, E.Auffray, P.Lecoq, M.Kobayashi, M.Ishii, Y.Usuki: <i>Decay kinetics and thermoluminescence of PbWO₄:La³⁺</i> . Appl. Phys. Lett. 71 (1997) 3755-3757	Acceleration of scintillation decay of radiation hard PbWO ₄ scintillator (leading&corresponding author, 93 citations in Scopus)
M. Nikl, A. Vedda, M. Fasoli, I. Fontana, V.V. Laguta, E. Mihokova, J. Pejchal, J. Rosa, K. Nejezchleb, <i>Shallow traps and radiative recombination processes in Lu₃Al₅O₁₂:Ce single crystal scintillator</i> . Phys. Rev. B 76 (2007) 195121	Model of scintillation mechanism and its bottlenecks in heavy garnet scintillator (leading& corresponding author, 180 citations in Scopus)
M. Nikl, J. Pejchal, E. Mihokova, J. A. Mares, H. Ogino, A. Yoshikawa, T. Fukuda, A. Vedda and C. D'Ambrosio, <i>Antisite defect-free Lu₃(Ga_xAl_{1-x})₅O₁₂:Pr scintillator</i> . Appl. Phys. Letters 88 (2006) 141916	Key report about multicomponent garnet scintillator with suppressed slow scintillation components (leading&corresponding author, 160 citations in Scopus)
K. Kamada , T. Yanagida , T. Endo , K. Tsutumi , Y. Fujimoto , A. Fukabori, A. Yoshikawa, J. Pejchal, M. Nikl , <i>Composition engineering in Ce doped (Lu,Gd)₃(Ga,Al)₅O₁₂ single crystal scintillators</i> Crystal Growth & Design 11 (2011) 4484-4490	Discovery of ultraefficient multicomponent garnet single crystal scintillators (leading author, 465 citations in Scopus, highly cited in WoS till 2021)
M. Nikl, K. Kamada, V. Babin, J. Pejchal, K. Pilarova, E. Mihokova, A. Beitlerova, K. Bartosiewicz, S. Kurosawa, A. Yoshikawa, <i>Defect-engineering in Ce-doped aluminum garnet single crystal scintillators</i> . Crystal Growth Design 14 (2014) 4827-4833	Novel strategy of optimization of garnet scintillators (leading& corresponding author, 206 citations in Scopus)
L. Martinazzoli, S. Nargelas, P. Boháček, R. Cala', M. Dušek, J. Rohlíček, G. Tamulaitis, E. Auffray, M. Nikl. <i>Compositional engineering of multicomponent garnet scintillators: Towards an ultra-accelerated scintillation response</i> . Materials Advances 3 (2022) 6842 - 6852	Realization of ultra-accelerated multicomponent garnet single crystal scintillator (leading&corresponding author, 10 citations in Scopus)
M. Pokorný, V. Babin, A. Beitlerová, K. Jurek, Jan Polák, J. Houžvička, D. Pánek, T. Parkman, V. Vaněček, M. Nikl, <i>The Gd-admixed (Lu,Gd)AlO₃ single crystals: Breakthrough in heavy perovskite scintillators</i> . NPG Asia Materials (2021) 13 :66.	Discovery of multicomponent heavy perovskite bulk single crystal scintillator (leading author, 11 citations in Scopus)
M. Nikl, <i>Scintillation detectors for X-rays</i> . Meas. Sci. Technol. 17 (2006) R37-R54	invited review paper, 713 citations in Scopus, highly cited in WoS till 2016
M. Nikl, A. Yoshikawa, <i>Recent R&D trends in inorganic single crystal scintillator materials for radiation detection</i> . Adv. Opt. Mater. 3 (2015) 463–481	invited review paper, leading& corresponding author, 553 citations in Scopus, highly cited in WoS