Curriculum Vitae

Name **Dr. Hiroki Tanaka**

Contact Leibniz-Institut für Kristallzüchtung (IKZ)
Volumenkristalle
Max-Born-Str. 2, 12489 Berlin
+49(0)30 6392 2821
hiroki.tanaka@ikz-berlin.de

Research Interests

- Fluoride bulk crystal growth for photonics
- Materials for solid-state lasers
- Laser cooling of solids by anti-Stokes fluorescence
- Nonlinear optics for vacuum-UV generation

Education

2016 – 2018	Research assistant for Leading Graduate School program (the Ministry of Education, Culture, Sports, Science and Technology, Japan)
2018	Ph.D., Graduate School of Science and Technology, Keio University (Japan)
2015	Master of Engineering, Graduate School of Science and Technology, Keio University (Japan)
2013	Diplôme d'Ingénieur, Ecole Centrale de Lyon (France)

Research Experience

Since 2024	Leibniz Junior Research Group Leader at IKZ
2018 - 2023	Postdoctoral researcher at IKZ
2015 - 2018	Ph.D. student at Keio University (Japan)

Teaching

2022	Physik III Optik, Lectures on Crystal Optics, Humboldt University of Berlin

Funding

2024 - 2028	*Photonics with ultra-pure fluoride crystals* funded by Leibniz Competition
2023 - 2025	*Laser cooling of highly pure rare-earth-doped fluoride crystals* funded by DFG

Professional Activities and Memberships

2019 - 2023	Peer review, 43 articles
Since 2014	Membership, Optica (formerly Optical Society), the Laser Society of Japan, the Japan Society of Applied Physics

Honors and Recognitions

2022	Encouragement award, The Laser Society of Japan
2016	Outstanding poster presentation award, Advanced Solid State Lasers Conference
2016	Best student poster award, The 5th Advanced Lasers and Photon Sources
2013	Best student poster award, The 3rd Advanced Lasers and Photon Sources

Presentations

2022	Invited talk at SPIE Photonics West conference, “Growth of highly pure fluoride crystals for laser cooling”
2022	Invited talk at the 42nd Annual Meeting of The Laser Society of Japan, “Solid-state lasers directly emitting in the visible using rare-earth-doped single crystals”
2016	Invited talk at the 37th Annual Meeting of The Laser Society of Japan, “Solid-state lasers directly pumped by GaN-based laser diode”

Ten key publications

1. H. Tanaka, S. Püschel, "Monte Carlo fluorescence ray tracing simulation for laser cooling of solids," Opt. Express **32**, 2306–2320 (2024)
2. S. J. Herr, H. Tanaka, I. Breunig, M. Bickermann, F. Kühnemann, Fanout periodic poling of $BaMgF_4$ crystals, Opt. Mat. Express **13**, 2158–2164 (2023)
3. S. Püschel, F. Mauerhoff, C. Kränkel, and H. Tanaka, "Laser cooling in Yb:KY_3F_{10}: a comparison with Yb:YLF," Opt. Express **30**, 47235–47248 (2022).
4. H. Tanaka, S. Kalusniak, M. Badtke, M. Demesh, N. V. Kuleshov, F. Kannari, and C. Kränkel, "Visible solid-state lasers based on Pr^{3+} and Tb^{3+}," Prog. Quantum Electron. **84**, 100411 (2022).
5. S. Püschel, S. Kalusniak, C. Kränkel, and H. Tanaka, "Temperature-dependent radiative lifetime of Yb:YLF: refined cross sections and potential for laser cooling," Opt. Express **29**, 11106–11120 (2021).
6. S. Kalusniak, H. Tanaka, E. Castellano-Hernández, and C. Kränkel, "UV-pumped Tb^{3+}-lasers," Opt. Lett. **45**, 6170–6173 (2020).
7. H. Tanaka, C. Kränkel, and F. Kannari, "Transition-metal-doped saturable absorbers for passive Q-switching of visible lasers," Opt. Mater. Express **10**, 1827–1842 (2020).
8. N. Sugiyama, S. Fujita, Y. Hara, H. Tanaka, and F. Kannari, "Diode-pumped 640 nm Pr:YLF regenerative laser pulse amplifier," Opt. Lett. **44**, 3370–3373 (2019).
9. H. Tanaka, S. Fujita, and F. Kannari, "High-power visibly emitting Pr^{3+}:YLF laser end pumped by single-emitter or fiber-coupled GaN blue laser diodes," Appl. Opt. **57**, 5923–5928 (2018).
10. R. Sawada, H. Tanaka, N. Sugiyama, and F. Kannari, "Wavelength-multiplexed pumping with 478- and 520-nm indium gallium nitride laser diodes for Ti:sapphire laser," Appl. Opt. **56**, 1654–1661 (2017).