

Nathalie Picqué

List of Publications in Peer-Reviewed Journals

Full list of publications, proceedings, invited talks at <http://frequency-comb.eu/doc/Scientific-Production-Nathalie-Picque.pdf>

Submitted for publication:

- 80.** K. Van Gasse, Z. Chen, E. Vicentini, J. Huh, S. Poelman, Z. Wang, G. Roelkens, T.W. Hänsch, B. Kuyken, N. Picqué, An on-chip III-V-semiconductor-on-silicon laser frequency comb for gas-phase molecular spectroscopy in real-time, preprint at arXiv:2006.15113 (2020).
- 79.** Z. Chen, T.W. Hänsch, N. Picqué, Up-conversion mid-infrared dual-comb spectroscopy, preprint at arXiv:2003.06930 (2020).

Published:

- 78.** N. Picqué, T.W. Hänsch, Interferometry with optical frequency combs, *Photoniques* **113**, 38-42 (2022).
- 77.** A. Shams-Ansari, M. Yu, Z. Chen, C. Reimer, M. Zhang, N. Picqué, M. Lončar, An integrated lithium-niobate electro-optic platform for spectrally tailored dual-comb spectroscopy, *Communications Physics* **5**, 88 (2022).
- 76.** K. Fritsch, J. Brons, M. Iandulskii, K.F. Mak, Z. Chen, N. Picqué, O. Pronin, Dual-comb thin-disk oscillator, *Nature Communications* **13**, 2584 (2022).
- 75.** M. Piccardo, V. Ginis, A. Forbes, S. Mahler, A.A. Friesem, N. Davidson, H. Ren, A. H. Dorrah, F. Capasso, F.T. Dullo, B. S. Ahluwalia, A. Ambrosio, S. Gigan, N. Treps, M. Hiekkämäki, R. Fickler, M. Kues, D. Moss, R. Morandotti, J. Riemenberger, T.J. Kippenberg, J. Faist, G. Scalari, N. Picqué, T.W. Hänsch, G. Cerullo, C. Manzoni, L.A. Lugiato, M. Brambilla, L. Columbo, A. Gatti, F. Prati, A. Shiri, A.F. Abouraddy, A. Alù, E. Galiffi, J.B. Pendry, P.A. Huidobro, Roadmap on multimode light shaping, *Journal of Optics* **24**, 013001 (2022).
- 74.** E. Vicentini, Z. Wang, K. Van Gasse, T.W. Hänsch, N. Picqué, Dual-comb hyperspectral digital holography, *Nature Photonics* **15**, 890–894 (2021).
- 73.** J. Huh, Z. Chen, E. Vicentini, T.W. Hänsch, N. Picqué, Time-resolved dual-comb spectroscopy with a single electro-optic modulator, *Optics Letters* **46**, 3957-3960 (2021).
- 72.** N. Picqué, T.W. Hänsch, Photon-level broadband spectroscopy and interferometry with two frequency combs, *Proceedings of the National Academy of Sciences of the United States of America* **117**, 26688-26691 (2020).
- 71.** A. Shams-Ansari, P. Latawiec, Y. Okawachi, V. Venkataraman, M. Yu, B. Desiatov, H. Atikian, G.L. Harris, N. Picqué, A.L. Gaeta, M. Loncar, Supercontinuum generation in angle-etched diamond waveguides, *Optics Letters* **44**, 4056-4059 (2019).
- 70.** N. Picqué, T.W. Hänsch, Frequency comb spectroscopy, *Nature Photonics* **13**, 146-157 (2019).
- 69.** N. Picqué, T.W. Hänsch, Mid-infrared spectroscopic sensing, *Optics & Photonics News* **19**, 26-33, issue of June (2019).
- 68.** G. Scalari, J. Faist, N. Picqué, On-chip mid-infrared and THz frequency combs for spectroscopy, *Applied Physics Letters* **114**, 150401 (2019).
- 67.** Z. Chen, T.W. Hänsch, N. Picqué, Mid-infrared feed-forward dual-comb spectroscopy, *Proceedings of the National Academy of Sciences of the United States of America* **116**, 3454-3459 (2019).

- 66.** J. Nürnberg, C. G. E. Alfieri, Z. Chen, D. Waldburger, N. Picqué, U. Keller, An unstabilized femtosecond semiconductor disk laser for dual-comb spectroscopy of acetylene, *Optics Express* **27**, 3190-3199 (2019).
- 65.** M.L. Weichmann, P.B. Changala, J. Ye, Z. Chen, M. Yan, N. Picqué, Broadband molecular spectroscopy with optical frequency combs, *Journal of Molecular Spectroscopy* **355**, 66-78 (2019).
- 64.** Z. Chen, M. Yan, T.W. Hänsch, N. Picqué, A phase-stable dual-comb interferometer, *Nature Communications* **9**, 3035 (2018).
- 63.** M. Yu, Y. Okawachi, A.G. Griffith, N. Picqué, M. Lipson, A.L. Gaeta, Silicon-chip-based mid-infrared dual-comb spectroscopy, *Nature Communications* **9**, 1869 (2018).
- 62.** S.A. Meek, A. Hipke, G. Guelachvili, T.W. Hänsch, N. Picqué, Doppler-free Fourier transform spectroscopy, *Optics Letters* **43**, 162-165 (2018).
- 61.** A. Parriaux, M. Conforti, A. Bendahmane, J. Fatome, C. Finot, S. Trillo, N. Picqué, G. Millot, Spectral broadening of picosecond pulses by dispersive shock waves in optical fibers, *Optics Letters* **42**, 3044-3047 (2017).
- 60.** M. Yan, P.-L. Luo, K. Iwakuni, G. Millot, T.W. Hänsch, N. Picqué, Mid-infrared dual-comb spectroscopy with electro-optic modulators, *Light: Science and Applications* **6**, e17076 (2017).
- 59.** M. Ferreira, E. Castro-Camus, D. Ottaway, J. Miguel Lopez-Higuera, X. Feng, K. P Chen, Y. Jeong, N. Picqué, L. Tong, B. Reinhard, P. Pellegrino, M. Diem, Q. Quan, Roadmap on Optical Sensors, *Journal of Optics* **19**, 083001 (2017).
- 58.** K.J. Mohler, B.J. Bohn, M. Yan, G. Mélen, T.W. Hänsch, N. Picqué, Dual-Comb Coherent Raman Spectroscopy with Lasers of 1-GHz Pulse Repetition Frequency, *Optics Letters* **42**, 318-321 (2017).
- 57.** G. Millot, S. Pitois, M. Yan, T. Hovannysyan, A. Bendahmane, T.W. Hänsch, N. Picqué, Frequency-agile dual-comb spectroscopy, *Nature Photonics* **10**, 27-30, (2016).
- 56.** B. Kuyken, T. Ideguchi, S. Holzner, M. Yan, T.W. Hänsch, J. Van Campenhout, P. Verheyen, S. Coen, F. Leo, R. Baets, G. Roelkens, N. Picqué, An octave spanning mid-infrared frequency comb generated in a silicon nanophotonic wire waveguide, *Nature Communications* **6**, 6310 (2015).
- 55.** A. Hipke, S.A. Meek, T. Ideguchi, T.W. Hänsch, N. Picqué, Broadband Doppler-limited two-photon and stepwise excitation spectroscopy with laser frequency combs, *Phys. Rev. A* **90**, 011805(R) (2014).
- 54.** S. Chaitanya Kumar, A. Esteban-Martin, T. Ideguchi, M. Yan, S. Holzner, T.W. Hänsch, N. Picqué, M. Ebrahim-Zadeh, Few-cycle broadband mid-infrared optical parametric oscillator pumped by a 20-fs Ti:sapphire laser, *Laser Photonics Rev.* **8**, L86–L91 (2014).
- 53.** T. Ideguchi, A. Poisson, G. Guelachvili, N. Picqué, T.W. Hänsch, Adaptive real-time dual-comb spectroscopy, *Nature Communications* **5**, 3375 – 8 pages (2014).
- 52.** S.A. Meek, A. Poisson, G. Guelachvili, T.W. Hänsch, N. Picqué, Fourier transform spectroscopy around 3 μm with a broad difference frequency comb, *Applied Physics B* **114**, 573-578 (2014).
- 51.** T. Ideguchi, S. Holzner, B. Bernhardt, G. Guelachvili, N. Picqué, T.W. Hänsch, Coherent Raman spectro-imaging with laser frequency combs, *Nature* **502**, 355-358 (2013).
- 50.** T.W. Hänsch and N. Picqué, Laser spectroscopy and frequency combs, *Journal of Physics: Conference Series* **467**, 012001 – 7 pages (2013).
- 49.** C.Y. Wang, T. Herr, P. Del'Haye, A. Schliesser, R. Holzwarth, T. W. Hänsch, N. Picqué and T. J. Kippenberg, Mid-infrared optical frequency combs at 2.5 μm based on crystalline microresonators, *Nature Communications* **4**, 1345 (2013).
- 48.** T.W. Hänsch, N. Picqué, Future Fourier transform spectroscopy, *Encyclopedia of Biophysics*, Springer Verlag, 1792-1799 (2013).

- 47.** T. Ideguchi, B. Bernhardt, G. Guelachvili, T.W. Hänsch, N. Picqué, Raman-induced Kerr effect dual-comb spectroscopy, *Optics letters* **37**, 4498-4500 (2012).
- 46.** T. Ideguchi, A. Poisson, G. Guelachvili, T.W. Hänsch, N. Picqué, Adaptive dual-comb spectroscopy of iodine in the green region, *Optics letters* **37**, 4847-4849 (2012).
- 45.** A. Schliesser, N. Picqué, T.W. Hänsch, Mid-infrared frequency combs, *Nature Photonics* **6**, 440-449 (2012).
- 44.** R. Chiche, D. Jehanno, V. Soskov, A. Variola, F. Zomer, N. Picqué, Les cavités Fabry-Pérot en mode pulsé et leurs récentes applications, in Systemes femtosecondes, optique et phénomènes ultrarapides, Publication mission ressources et compétences technologiques, 119-169 (2012).
- 43.** T.W. Hänsch, N. Picqué, Frequency combs, *Handbook of Lasers and Optics*, second edition, F. Träger Ed., Springer Berlin Heidelberg, 1285-1304 (2012).
- 42.** N. Picqué, T.W. Hänsch, Molecular spectroscopy with laser frequency combs, *Proceedings of the 20th International Conference on Laser Spectroscopy*, 185-194, W. Ertmer, R. Scholz Ed., Logos Verlag Berlin (2011).
- 41.** T.W. Hänsch, N. Picqué, Peignes de fréquences femtosecondes : aux limites de la spectroscopie, *Images de la Physique 2011*, 31-38 (2011).
- 40.** B. Bernhardt, N. Picqué, T.W. Hänsch, Echtzeit-Spurengasanalyse mit Frequenzkämmen, *Physik in unserer Zeit* **41**, 59-60 (2010).
- 39.** B. Bernhardt, E. Sorokin, P. Jacquet, R. Thon, T. Becker, I.T. Sorokina, N. Picqué, T.W. Hänsch, Mid-infrared dual comb spectroscopy with Cr²⁺ZnSe femtosecond oscillators, *Applied Physics B* **100**, 3-8 (2010).
- 38.** B. Bernhardt, A. Ozawa, P. Jacquet, M. Jacquay, Y. Kobayashi, T. Udem, R. Holzwarth, G. Guelachvili, T.W. Hänsch, N. Picqué, Cavity-enhanced dual-comb spectroscopy, *Nature Photonics* **4**, 55-57 (2010).
- 37.** J. Mandon, G. Guelachvili, N. Picqué, Fourier Transform Spectroscopy with a Laser Frequency Comb, *Nature Photonics* **3**, 99-102 (2009).
- 36.** E. Sorokin, V. Kalashnikov, J. Mandon, G. Guelachvili, N. Picqué, I.T. Sorokina, Cr:YAG chirped pulse oscillator, *New Journal of Physics*, **10**, 083022 (2008).
- 35.** J. Mandon, E. Sorokin, I.T. Sorokina, G. Guelachvili, N. Picqué, Supercontinua for high resolution absorption multiplex infrared spectroscopy, *Optics Letters* **33**, 285-287 (2008).
- 34.** N. Picqué, G. Guelachvili, La spectroscopie par transformation de Fourier, *Photoniques* **29**, 32-35 (2007).
- 33.** E. Sorokin, I.T. Sorokina, J. Mandon, G. Guelachvili, N. Picqué, Sensitive multiplex spectroscopy in the molecular fingerprint 2.4 μm region with a Cr²⁺:ZnSe femtosecond laser, *Optics Express* **15**, 16540-16545 (2007).
- 32.** J. Mandon, G. Guelachvili, N. Picqué, Frequency Modulation Fourier transform spectroscopy: a broadband method for measuring weak absorptions and dispersions, *Optics Letters* **32**, 2206-2208 (2007).
- 31.** J. Mandon, G. Guelachvili, N. Picqué, F. Druon, P. Georges, Femtosecond laser Fourier transform absorption spectroscopy, *Optics Letters* **32**, 1677-1679 (2007).
- 30.** M. Jacquemet, N. Picqué, G. Guelachvili, A. Garnache, I. Sagnes, M. Strassner, C. Symonds, Continuous-wave 1.55 μm optically-pumped vertical-external-cavity surface-emitting laser for broadband multiplex spectroscopy, *Optics Letters* **32**, 1387-1389 (2007).
- 29.** D. Boudjaadar, J.-Y. Mandin, V. Dana, N. Picqué, G. Guelachvili, L. Régalia-Jarlot, X. Thomas, P. Von der Heyden, ¹²C¹⁶O₂ line intensity FTS measurements with 1 % assumed accuracy in the 1.5-1.6 μm spectral range, *Journal of Molecular Spectroscopy* **238**, 108-117 (2006).

- 28.** H. Herbin, N. Picqué, G. Guelachvili, E. Sorokin, I.T. Sorokina, N₂O weak lines observed between 3900 and 4050 cm⁻¹ from long path absorption spectra, *Journal of Molecular Spectroscopy* **238**, 256-259 (2006).
- 27.** D. Boudjaadar, J.-Y. Mandin, V. Dana, N. Picqué, G. Guelachvili, ¹²C¹⁶O₂ line intensity measurements around 1.6 μm, *Journal of Molecular Spectroscopy* **236**, 158-167 (2006).
- 26.** V. Girard, R. Farrenq, E. Sorokin, I.T. Sorokina, G. Guelachvili, N. Picqué, Acetylene weak bands at 2.5 μm from intracavity Cr²⁺ZnSe laser absorption observed with time-resolved Fourier transform spectroscopy, *Chemical Physics Letters* **419**, 584-588 (2006).
- 25.** F. Gueye, E. Safari, M. Chenevier, G. Guelachvili, N. Picqué, Intracavity Cr⁴⁺:YAG laser absorption analyzed by time-resolved Fourier transform spectroscopy, *Applied Physics B* **81**, 1143-1147 (2005).
- 24.** N. Picqué, F. Gueye, G. Guelachvili, E. Sorokin, I.T. Sorokina, Time-resolved Fourier transform intracavity spectroscopy with a Cr²⁺:ZnSe laser, *Optics Letters* **30**, 3410-3412 (2005).
- 23.** H. Herbin, R. Farrenq, G. Guelachvili, N. Picqué, Cation-like Doppler shifts from a neutral molecule in an electrical discharge, *Chemical Physics Letters* **409**, 310-314 (2005).
- 22.** H. Herbin, R. Farrenq, G. Guelachvili, B. Pinchemel, N. Picqué, Perturbation analysis in the X⁴Φ- C⁴Δ rovibronic transitions of ⁴⁸Ti³⁵Cl at 3 μm, *Journal of Molecular Spectroscopy* **226**, 103–111 (2004).
- 21.** N. Picqué, G. Guelachvili, Quantitative wideband spectroscopy with kilometric absorption paths, *Molecular Physics* **101**, 645 - 649 (2003).
- 20.** Jean-Yves Mandin, Victor Dana, David Jacquemart, Nathalie Picqué, Guy Guelachvili, Multispectrum processing approach of weak H₂O profiles recorded with absorption paths ranging from 20 to 120 km, *Journal of Quantitative Spectroscopy and Radiative Transfer* **78**, 353-363 (2003).
- 19.** N. Picqué, G. Guelachvili, A.A Kachanov, High-sensitivity time-resolved intracavity laser Fourier transform spectroscopy with vertical cavity surface emitting multiple quantum well lasers, *Optics Letters* **28**, 313-315 (2003).
- 18.** A. Faye, Q. Kou, R. Farrenq, N. Picqué, G. Guelachvili, Time-Resolved Fourier Transform Spectroscopy applied to collisional relaxation study of the B³P_g ν = 0 level of N₂ in a pulsed electrical discharge, *Journal of Physics D: Applied Physics* **35**, 2704-2710 (2002).
- 17.** G. Giusfredi, P. Cancio, P. De Natale, L. Fallani, N. Picqué, and M. Inguscio, Preliminary results of an accurate measurement of the ⁴He 2³P₀ - 2³P₁ fine structure interval, "Frequency Standards and Metrology", P. Gill ed., World Scientific Publishing, UK, 230-237 (2002).
- 16.** Nathalie Picqué, Fast phase-selective detection of transient species with step-scan Fourier transform spectroscopy, *Journal of the Optical Society of America B* **19**, 1706-1710 (2002).
- 15.** Nathalie Picqué, Sensitive instrumental developments in high-resolution laser and Fourier transform spectroscopies, *Vibrational Spectroscopy* **29**, 83-88 (2002).
- 14.** George Birnbaum, Andrew Buechle, Michael E. Thomas, Matthew Banta, Nathalie Picqué, Guy Guelachvili, Jean-Michel Hartmann, Experimental and theoretical studies of absorption in microwindows of the v₄ band of Methane and Methane-Hydrogen, *Journal of Quantitative Spectroscopy and Radiative Transfer* **72**, 637-654 (2002).
- 13.** G. Guelachvili and N. Picqué, "High-resolution Fourier transform Spectrometry of Gases", in *Handbook of Vibrational Spectroscopy*, J.M. Chalmers and P.R.Griffiths (Eds), John Wiley & Sons, Ltd, Volume **1**, 150 – 164 (2002).
- 12.** N. Picqué, P. Cancio, G. Giusfredi, P. de Natale, "High-stability diode-laser-based frequency reference at 1083 nm using iodine lines at 541.5 nm ", *Journal of the Optical Society of America B* **18**, 692-697 (2001).

11. D. Jacquemart, J.-Y. Mandin, V. Dana, N. Picqué, G. Guelachvili, "A multispectrum fitting procedure to deduce molecular line parameters: application to the 3-0 band of $^{12}\text{C}^{16}\text{O}$ ", *European Physical Journal D* **14**, 55-69 (2001).
10. N. Picqué, G. Guelachvili, S. Civis, Experimental transition dipole moment for the four lowest $\Delta v=1$ bands of ArH^+ in the $^1\Sigma^+$ fundamental state, *Journal of Chemical Physics* **113**, 2134-2138 (2000).
9. N. Picqué, G. Guelachvili, High-information time-resolved Fourier transform spectroscopy at work, *Applied Optics* **39**, 3984-3990 (2000).
8. N. Picqué, G. Guelachvili, Emission spectra of HCN/HNC in the 2-5 μm range of astrophysical interest, *Spectrochimica Acta A* **56**, 681-702 (2000).
7. N. Picqué, G. Guelachvili, V. Dana, J.-Y. Mandin, Line intensities, vibrational transition moment, and self-broadening coefficients for the 3-0 band of $^{12}\text{C}^{16}\text{O}$, *Journal of Molecular Structure* **517/518**, 433-440 (2000).
6. N. Picqué, Wide-band spectroscopic investigation of the state-to-state dependence of ArH^+ ion average mobility in a Ar/He plasma, *Chemical Physics Letters* **310**, 183-188 (1999).
5. N. Picqué, G. Guelachvili, ArH^+ near 5 μm with high resolution double modulation FTS, *Vibrational Spectroscopy* **19**, 295-299 (1999).
4. N. Picqué, G. Guelachvili, High resolution multi-modulation Fourier transform spectroscopy, *Applied Optics* **38**, 1224-1230 (1999).
3. I. Kleiner, L.R. Brown, G. Tarrago, Q. Kou, N. Picqué, G. Guelachvili, V. Dana, J.Y. Mandin, Line positions and intensities for the vibrational system $v_1/v_3/2v_4$ of $^{14}\text{NH}_3$ near 3 μm , *Journal of Molecular Spectroscopy* **193**, 46-71 (1999).
2. M.Y. Allout, J.Y. Mandin, V. Dana, N. Picqué, G. Guelachvili, FTS Generalized Apparatus Function, *Journal of Quantitative Spectroscopy and Radiative Transfer*, **60**, 979-987 (1998).
1. N. Picqué, G. Guelachvili, Absolute wavenumbers and self-induced pressure lineshift coefficients for the 3-0 band of $^{12}\text{C}^{16}\text{O}$, *Journal of Molecular Spectroscopy*, **185**, 244-248 (1997).