# Julien Réhault

**Laser scientist, PhD**

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## Professional Attributes

- Theoretical and experimental background in Physical Chemistry
  - PhD in Physical Chemistry, co-author of > 35 research articles
- Successful experience in writing personal and research grants.
  - SNF mobility grant, ERC Proof of Concept.
- Connection with industry, through collaborations and patents
  - ERC grant in collaboration with 2 companies, 1 patent submitted.
- Profound connection and network in Swiss institutions
  - I worked in University Zürich, Paul Scherrer Institute, University Bern. I have experience working with the Swiss National Foundation.
- Experience with project management
  - I advised the projects of 2 PhD students and 4 masters students.
- Teaching Experience
  - I teached 10 semesters of Exercise and Experimental classes in Physical Chemistry, Quantum chemistry, Group theory and Spectroscopy.

## Skills

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|---|---|
| Scientific Knowledge | ★★★★★★ |
| Communication & Management | ★★★★★☆ |
| Experience with SNF | ★★★★★☆ |
| Experience with Swiss Institutions | ★★★★★☆ |
| Working in team | ★★★★★☆ |
| Teaching in University | ★★★★★☆ |

## Work Experience

UNIVERSITY OF BERN, **Postdoc** — Aug 2017-Present

Management of the new Labs of Prof. Banerji in Department of Chemistry and Biochemistry. Planning for the new experiments in the frame of Prof. Banerji ERC grant. Supervision of PhD students in the Labs. Responsible for the implementation of security measures in the Labs.

UNIVERSITY OF BERN, **Internship** — May 2017- July 2017

Planning of a beamtime in at Free Electron Laser FERMI for Prof. Feurer.

PAUL SCHERRER INSTITUT, **Laser Scientist** — Apr. 2015- Mar. 2017

Planning, design and implementation of lasers and optical setups for the Experimental stations of the SwissFEL project. Participation to experiments in different Free Electron Lasers Facilities.

POLITECNICO DI MILANO , **SNF fellow, Research Scientist** — Dec. 2012 – Mar.2015

Development of 2D spectroscopy in the UV/Vis range. New strategies for Coherent Raman spectroscopy, Circular Dichroism spectroscopy and FT spectroscopy from UV to mid-IR.

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|---|---|
| | UNIVERSITY ZURICH, **PhD** — June 2008 – Nov. 2012<br>Development of ultrafast methods for application in transient IR absorption and 2D-IR spectroscopy. Application to a new class of biomimetic photoswitches. |
| | UNIVERSITE DE LILLE & CNRS, **Research Engineer** — Dec 2003 – May 2008<br>In charge of the experimental research of transient absorption in the range of femtosecond to microsecond time scale, in the ultraviolet, visible and infrared (< 10 µm) ranges. |
| **Scientific Output** | Author and co-Author of more than **30 journal articles**.<br>Co-Author of one **Patent.** (Under evaluation by Italian Institutions)<br>Participation to more than **20 scientific international conferences**, workshop and summer school in the domain of chemistry and physics. Oral and poster contribution.<br>Reviewer expert for Scientific literature (Journal of Physical Chemistry B and Optica.) |
| **Education** | UNIVERSITE DE LILLE — 2002-2003<br>**M.Sc.** in laser physics, 1st class<br>UNIVERSITE DE RENNES — 1997-2001<br>**B.Sc.** in Physics. |
| **Language Skills** |  ★★★★★★  ★★★★★★<br>  ★★★★★☆  ★★★☆☆☆<br>  ★★★★★☆ |
| **IT skills** | MICROSOFT OFFICE ★★★★★★ — LATEX ★★★★★★<br>MATLAB ★★★★★☆ — WEB OF KNOWLEDGE ★★★★★★<br>LABVIEW ★★★★★★ |
| **Personal interests** | Running, skiing, sailing and travelling. Cooking. |

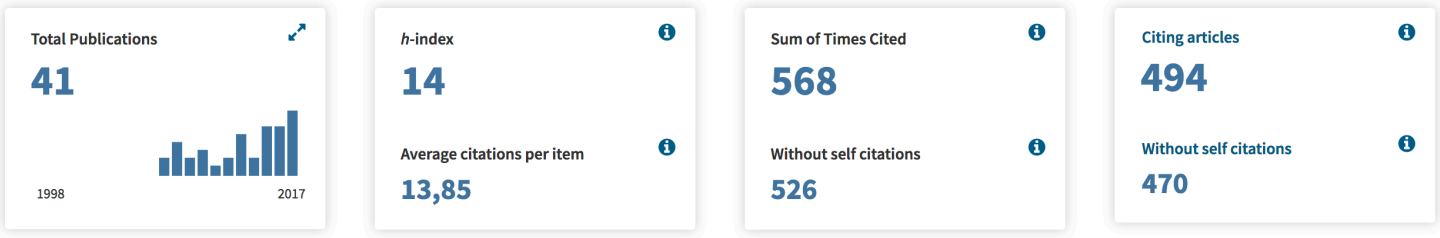
## Additional documents

*Attached : list of publications.*

*Upon request: list of participation to conferences, reference letters and certificates of the academic titles.*

# Julien Réhault , Laser scientist, PhD

List of Publications :





[1] F. Preda *et al.*, "Time-domain measurement of optical activity by an ultrastable common-path interferometer," *Opt. Lett.*, vol. 43, no. 8, pp. 1882–1885, Apr. 2018.

[2] T. Stoll *et al.*, "Two-Dimensional Electronic Spectroscopy Unravels sub-100 fs Electron and Hole Relaxation Dynamics in Cd-Chalcogenide Nanostructures," *J. Phys. Chem. Lett.*, vol. 8, no. 10, pp. 2285–2290, May 2017.

[3] J. Réhault *et al.*, "Fourier transform spectroscopy in the vibrational fingerprint region with a birefringent interferometer," *Opt. Express*, vol. 25, no. 4, pp. 4403–4413, Feb. 2017.

[4] F. Preda *et al.*, "Linear and Nonlinear Spectroscopy by a Common-Path Birefringent Interferometer," *IEEE J. Sel. Top. Quantum Electron.*, vol. 23, no. 3, pp. 1–9, May 2017.

[5] C. J. Milne *et al.*, "SwissFEL: The Swiss X-ray Free Electron Laser," *Appl. Sci.*, vol. 7, no. 7, p. 720, Jul. 2017.

[6] L. Lüer *et al.*, "Lévy Defects in Matrix-Immobilized J Aggregates: Tracing Intra-and Intersegmental Exciton Relaxation," *J. Phys. Chem. Lett.*, vol. 8, no. 3, pp. 547–552, Feb. 2017.

[7] J. W. Jarrett *et al.*, "Dissecting charge relaxation pathways in CdSe/CdS nanocrystals using femtosecond two-dimensional electronic spectroscopy," *Nanoscale*, vol. 9, no. 13, pp. 4572–4577, Mar. 2017.

[8] B. Debus, M. Orio, J. Rehault, G. Burdzinski, C. Ruckebusch, and M. Sliwa, "Fusion of Ultraviolet–Visible and Infrared Transient Absorption Spectroscopy Data to Model Ultrafast Photoisomerization," *J. Phys. Chem. Lett.*, vol. 8, no. 15, pp. 3530–3535, Aug. 2017.

[9] T. Stoll *et al.*, "Superatom State-Resolved Dynamics of the Au25(SC8H9)18– Cluster from Two-Dimensional Electronic Spectroscopy," *J. Am. Chem. Soc.*, vol. 138, no. 6, pp. 1788–1791, Feb. 2016.

[10] A. D. Sio *et al.*, "Tracking the coherent generation of polaron pairs in conjugated polymers," *Nat. Commun.*, vol. 7, p. 13742, Dec. 2016.

[11] A. Oriana, J. Réhault, F. Preda, D. Polli, and G. Cerullo, "Scanning Fourier transform spectrometer in the visible range based on birefringent wedges," *JOSA A*, vol. 33, no. 7, pp. 1415–1420, Jul. 2016.

[12] E. Callini *et al.*, "Stabilization of volatile Ti(BH4)3 by nano-confinement in a metal–organic framework," *Chem. Sci.*, vol. 7, no. 1, pp. 666–672, 2016.

[13] J. Réhault *et al.*, "Broadband stimulated Raman scattering with Fourier-transform detection," *Opt. Express*, vol. 23, no. 19, pp. 25235–25246, Sep. 2015.

[14] M. Maiuri *et al.*, "Ultra-broadband 2D electronic spectroscopy of carotenoid-bacteriochlorophyll interactions in the LH1 complex of a purple bacterium," *J. Chem. Phys.*, vol. 142, no. 21, p. 212433, Jun. 2015.

[15] F. Laquai, D. Andrienko, R. Mauer, and P. W. M. Blom, "Charge Carrier Transport and Photogeneration in P3HT:PCBM Photovoltaic Blends," *Macromol. Rapid Commun.*, vol. 36, no. 11, pp. 1001–1025, Jun. 2015.

[16] J. Réhault, M. Maiuri, A. Oriana, and G. Cerullo, "Two-dimensional electronic spectroscopy with birefringent wedges," *Rev. Sci. Instrum.*, vol. 85, no. 12, p. 123107, Dec. 2014.

[17] J. Réhault, M. Maiuri, C. Manzoni, D. Brida, J. Helbing, and G. Cerullo, "2D IR spectroscopy with phase-locked pulse pairs from a birefringent delay line," *Opt. Express*, vol. 22, no. 8, p. 9063, Apr. 2014.

[18] J. Thøgersen *et al.*, "Hydration Dynamics of Aqueous Nitrate," *J. Phys. Chem. B*, vol. 117, no. 12, pp. 3376–3388, Mar. 2013.

[19] J. Réhault, "New developments in ultrafast polarization sensitive infrared spectroscopy.," 2013.

[20] J. Réhault and J. Helbing, "Exploring the polarization degrees of freedom in collinear two-dimensional infrared spectroscopy," *EPJ Web Conf.*, vol. 41, p. 05003, Mar. 2013.

[21] G. Burdzinski, M. Sliwa, Y. Zhang, S. Delbaere, T. Pedzinski, and J. Réhault, "Photochemical formation of thiirene and thioketene in 1,2,3-thiadiazoles with phenyl substituents studied by time-resolved spectroscopy," *Photochem. Photobiol. Sci.*, vol. 12, no. 5, pp. 895–901, Apr. 2013.

[22] G. Burdzinski *et al.*, "Mechanistic Aspects of Ketene Formation Deduced from Femtosecond Photolysis of Diazocyclohexadienone, o-Phenylene Thioxocarbonate, and 2-Chlorophenol," *J. Org. Chem.*, vol. 78, no. 5, pp. 2026–2032, Mar. 2013.

[23] J. Réhault and J. Helbing, "Angle determination and scattering suppression in polarization-enhanced two-dimensional infrared spectroscopy in the pump-probe geometry," *Opt. Express*, vol. 20, no. 19, pp. 21665–21677, Sep. 2012.

[24] S. Protti, M. Fagnoni, S. Monti, J. Réhault, O. Poizat, and A. Albini, "Activation of aliphatic C–H bonds by tetracyanobenzene photosensitization. A time-resolved and steady-state investigation," *RSC Adv.*, vol. 2, no. 5, pp. 1897–1904, Feb. 2012.

[25] J. Réhault, V. Zanirato, M. Olivucci, and J. Helbing, "Linear dichroism amplification: Adapting a long-known technique for ultrasensitive femtosecond IR spectroscopy," *J. Chem. Phys.*, vol. 134, no. 12, pp. 124516-124516–10, Mar. 2011.

[26] O. Lancry, E. Pichonat, J. Réhault, M. Moreau, R. Aubry, and C. Gaquière, "Development of Time-resolved UV Micro-Raman Spectroscopy to measure temperature in AlGaN/GaN HEMTs," *Solid-State Electron.*, vol. 54, no. 11, pp. 1434–1437, Nov. 2010.

[27] J. Briand *et al.*, "Coherent ultrafast torsional motion and isomerization of a biomimetic dipolar photoswitch," *Phys. Chem. Chem. Phys.*, vol. 12, no. 13, pp. 3178–3187, Mar. 2010.

[28] S. Aloïse *et al.*, "Bridged Photochromic Diarylethenes Investigated by Ultrafast Absorption Spectroscopy: Evidence for Two Distinct Photocyclization Pathways," *J. Am. Chem. Soc.*, vol. 132, no. 21, pp. 7379–7390, Jun. 2010.

[29] C. Ruckebusch, M. Sliwa, J. Réhault, P. Naumov, J. P. Huvenne, and G. Buntinx, "Hybrid hard- and soft-modelling applied to analyze ultrafast processes by femtosecond transient absorption spectroscopy: Study of the photochromism of salicylidene anilines," *Anal. Chim. Acta*, vol. 642, no. 1–2, pp. 228–234, May 2009.

[30] L. Blanchet, J. Réhault, C. Ruckebusch, J. P. Huvenne, R. Tauler, and A. de Juan, "Chemometrics description of measurement error structure: Study of an ultrafast absorption spectroscopy experiment," *Anal. Chim. Acta*, vol. 642, no. 1–2, pp. 19–26, May 2009.

[31] K. M. Solntsev *et al.*, "Meta and Para Effects in the Ultrafast Excited-State Dynamics of the Green Fluorescent Protein Chromophores1," *J. Phys. Chem. B*, vol. 112, no. 9, pp. 2700–2711, Mar. 2008.

[32] B. Moine *et al.*, "Transient Absorption Studies of the Photochromic Behavior of 3H-Naphtho[2,1-b]pyrans Linked to Thiophene Oligomers via an Acetylenic Junction," *J. Phys. Chem. A*, vol. 112, no. 21, pp. 4719–4726, May 2008.

[33] G. Burdzinski, J. Réhault, J. Wang, and M. S. Platz, "A Study of the Photochemistry of Diazo Meldrum's Acid by Ultrafast Time-Resolved Spectroscopies," *J. Phys. Chem. A*, vol. 112, no. 41, pp. 10108–10112, Oct. 2008.

[34] S. Aloise, C. Ruckebusch, L. Blanchet, J. Rehault, G. Buntinx, and J.-P. Huvenne, "The Benzophenone S1(n,π*) → T1(n,π*) States Intersystem Crossing Reinvestigated by Ultrafast Absorption Spectroscopy and Multivariate Curve Resolution," *J. Phys. Chem. A*, vol. 112, no. 2, pp. 224–231, Jan. 2008.

[35] B. Moine, G. Buntinx, O. Poizat, J. Rehault, C. Moustrou, and A. Samat, "Transient absorption investigation of the photophysical properties of new photochromic 3H-naphtho[2,1-b]pyran," *J. Phys. Org. Chem.*, vol. 20, no. 11, pp. 936–943, 2007.

[36] S. Aloïse *et al.*, "Photochromism of Photoenolizable Ketones in Quinoline and 1,8-Naphthyridine Series Studied by Time-Resolved Absorption Spectroscopy," *J. Phys. Chem. A*, vol. 111, no. 10, pp. 1737–1745, Mar. 2007.