

## Publications

@ indicates corresponding author

\* indicates equal contribution

36) *Extremely efficient terahertz high harmonics generation in graphene by hot Dirac fermions*  
H.A. Hafez\*, S. Kovalev\*, J.-C. Deinert, Z. Mics, B. Green, N. Awari, M. Chen, S. Germanskiy,  
U. Lehnert, J. Teichert, Z. Wang, [K.J. Tielrooij](#), Z. Liu, Z. Chen, A. Narita, K. Müllen, M. Bonn,  
M. Gensch@, D. Turchinovich@  
**Nature** 561, 507 (2018)

35) *Nano-imaging of intersubband transitions in van der Waals quantum wells*  
P. Schmidt, F. Violla, S. Latini, M. Massicotte, [K.J. Tielrooij](#), S. Mastel, G. Navickaite, M.  
Danovich, D.A. Ruiz-Tijerina, C. Yelgel, V. Falko, K. Thygesen, R. Hillenbrand, F.H.L.  
Koppens@  
**Nat. Nanotechnol.** 13, 1035 (2018)

34) *The ultrafast dynamics and conductivity of photoexcited graphene at different Fermi energies*  
A. Tomadin\*, S. Hornett\*, H.I. Wang, E. Alexeev, A. Candini, C. Coletti, D. Turchinovich, M.  
Klaeui, M. Bonn; F.H.L. Koppens, E. Hendry, M. Polini, [K.J. Tielrooij](#)@  
**Sci. Adv.** 4, eaar5313 (2018)

33) *Out-of-plane heat transfer in van der Waals stacks through electron–hyperbolic phonon coupling*  
[K.J. Tielrooij](#)\*, N.C.H. Hesp\*, A. Principi, M.B. Lundeberg, E.A.A. Pogna, L. Banszerus, Z.  
Mics, M. Massicotte, P. Schmidt, D. Davydovskaya, D. Purdie, I. Goykhman, G. Soavi, A.  
Lombardo, K. Watanabe, T. Taniguchi, M. Bonn, D. Turchinovich, C. Stampfer, A.C. Ferrari, G.  
Cerullo, M. Polini, F.H.L. Koppens@  
**Nat. Nanotechnol.** 13, 41-46 (2018)

32) *Reversible photochemical control of doping levels in supported graphene*  
H.I. Wang, M. Braatz; N. Richter, [K.J. Tielrooij](#), Z. Mics, H. Lu, N.E. Weber, K. Muellen, D.  
Turchinovich, M. Klaeui@, M. Bonn@  
**J. Phys. Chem. C.** 121, 4083-4091 (2017)

31) *Super-Planckian electron cooling in a van der Waals stack*  
A. Principi, M.B. Lundeberg, N.C.H. Hesp, [K.J. Tielrooij](#), F.H.L. Koppens, M. Polini@  
**Phys. Rev. Lett.** 118, 126804 (2017)

30) *Photo-thermionic effect in graphene-based heterostructures*

M. Massicotte, P. Schmidt, F. Vialla, [K.J. Tielrooij](#), F.H.L. Koppens@

**Nat. Commun.** 7, 12174 (2016)

29) *Picosecond photoresponse in van der Waals heterostructures*

M. Massicotte, P. Schmidt, F. Vialla, K.G. Schädler, A. Reserbat-Plantey, K. Watanabe, T.

Taniguchi, [K.J. Tielrooij](#), F.H.L. Koppens@

**Nat. Nanotechnol.** 11, 42-46 (2016)

28) *Thermodynamic picture of ultrafast charge transport in graphene*

Z. Mics, [K.J. Tielrooij](#), K. Parvez, S. Jensen, I. Ivanov, X. Feng, K. Müllen, M. Bonn, D.

Turchinovich@

**Nat. Commun.** 6, 7655 (2015)

27) *Generation of photovoltage in graphene on a femtosecond timescale through efficient carrier heating*

[K.J. Tielrooij](#)®, L. Piatkowski\*, M. Massicotte\*, A. Woessner, Q. Ma, Y. Lee, K.S. Myhro, C.N.

Lau, P. Jarillo-Herrero, N.F. van Hulst®, F.H.L. Koppens@

**Nat. Nanotechnol.** 10, 437-443 (2015)

26) *Electrical control of optical emitter relaxation pathways enabled by graphene*

[K.J. Tielrooij](#), L. Orona\*, A. Ferrier\*, M. Badioli\*, G. Navickaite, S. Coop, S. Nanot, B. Kalinic, T.

Cesca, L. Gaudreau, Q. Ma, A. Centeno, A. Pesquera, A. Zurutuza, H. de Riedmatter, P.

Goldner, F.J. Garcia de Abajo, P. Jarillo-Herrero, F.H.L. Koppens@

**Nat. Phys.** 11, 281-287 (2015)

25) *Hot-carrier photocurrent effects at graphene-metal interfaces*

[K.J. Tielrooij](#)®, M. Massicotte, L. Piatkowski, A. Woessner, Q. Ma, P. Jarillo-Herrero, N.F. van

Hulst, F.H.L. Koppens@

**J. Phys. Cond. Mat.** 27, 164207 (2014) – invited

24) *Phonon-mediated mid-infrared photoresponse of graphene*

M. Badioli, A. Woessner, [K.J. Tielrooij](#), S. Nanot, G. Navickaite, T. Stauber, F.J. Garcia de

Abajo, F.H.L. Koppens@

**Nano Lett.** 14, 6374-6381 (2014)

23) *Competing ultrafast energy relaxation pathways in photoexcited graphene*

S.A. Jensen, Z. Mics, I. Ivanov, H.S. Varol, D. Turchinovich, F.H.L. Koppens®, M. Bonn®, [K.J.](#)

[Tielrooij](#)®

**Nano Lett.** 14, 5839–5845 (2014)

22) *Probing ultrafast temperature changes of aqueous solutions with coherent terahertz pulses*  
E.H.G. Backus\*<sup>@</sup>, [K.J. Tielrooij](#)\*<sup>@</sup>, M. Bonn, H.J. Bakker  
**Optics Lett.** 39, 1717-1720 (2014)

21) *Terahertz depolarization effects in colloidal TiO<sub>2</sub> films reveal particle morphology*  
S.A. Jensen, [K.J. Tielrooij](#), E. Hendry, M. Bonn, I. Rychetský, H. Nemeč<sup>@</sup>  
**J. Phys. Chem. C** 118, 1191-1197 (2014)

20) *Universal distance-scaling of nonradiative energy transfer to graphene*  
L. Gaudreau, [K.J. Tielrooij](#), G.E.D.K. Prawiroatmodjo, J. Osmond, F.J. Garcia de Abajo, F.H.L. Koppens<sup>@</sup>  
**Nano Lett.** 13, 2030-2035 (2013)

19) *Photoexcited carrier dynamics and impact-excitation cascade in graphene*  
J.C.W. Song, [K.J. Tielrooij](#), F.H.L. Koppens, L.S. Levitov<sup>@</sup>  
**Phys. Rev. B.** 87, 155429 (2013)

18) *Photoexcitation cascade and multiple hot-carrier generation in graphene*  
[K.J. Tielrooij](#)<sup>@</sup>, J.C.W. Song, S.A. Jensen, A. Centeno, A. Pesuera, A. Zurutuza Alorza, M. Bonn, L.S. Levitov, F.H.L. Koppens<sup>@</sup>  
**Nat. Phys.** 9, 248-252 (2013)

17) *Femtosecond study of the effects of ions and hydrophobes on the dynamics of water*  
S.T. van der Post, [K.J. Tielrooij](#), J. Hunger, E.H.G. Backus, H.J. Bakker<sup>@</sup>  
**Faraday Discuss.** 160, 171-189 (2013)

16) *Complex formation in aqueous trimethylamine-N-oxide (TMAO) solutions*  
J. Hunger, [K.J. Tielrooij](#), R. Buchner, M. Bonn, H.J. Bakker<sup>@</sup>  
**J. Phys. Chem. B** 116, 4783-4795 (2012)

15) *Anisotropic water reorientation around ions*  
[K.J. Tielrooij](#), S.T. van der Post, J. Hunger, M. Bonn, H.J. Bakker<sup>@</sup>  
**J. Phys. Chem. B** 115, 12638-12647 (2011)

14) *Vibrational and orientational dynamics of water in aqueous hydroxide solutions*  
J. Hunger, L. Liu, [K.J. Tielrooij](#), M. Bonn, H.J. Bakker<sup>@</sup>  
**J. Chem. Phys.** 135, 124517 (2011)

- 13) *Influence of concentration and temperature on the dynamics of water in the hydrophobic hydration shell of tetramethylurea*  
K.J. Tielrooij, J. Hunger, R. Buchner, M. Bonn, H.J. Bakker@  
**J. Am. Chem. Soc.** 132, 15671-15678 (2010)
- 12) *Cooperativity in ion hydration*  
K.J. Tielrooij, N. Garcia-Araez, M. Bonn, H.J. Bakker@  
**Science** 328, 1006-1009 (2010)
- 11) *Vibrational Förster energy transfer to hydrated protons*  
R.L.A. Timmer, K.J. Tielrooij, H.J. Bakker@  
**J. Chem. Phys.** 132, 194504 (2010)
- 10) *Dielectric relaxation dynamics of water in model membranes probed by terahertz spectroscopy*  
K.J. Tielrooij\*@, D. Paparo\*@, L. Piatkowski, H.J. Bakker, M. Bonn  
**Biophys. J.** 97, 2484 (2009)
- 9) *Assessment of carrier-multiplication efficiency in bulk PbSe and PbS*  
J.J.H. Pijpers, R. Ulbricht, K.J. Tielrooij, A. Osherov, Y. Golan, C. Delerue, G. Allan, M. Bonn@  
**Nat. Phys.** 5, 811 (2009)
- 8) *Strong temperature dependence of water reorientation in hydrophobic hydration shells*  
C. Petersen, K.J. Tielrooij, H. J. Bakker@  
**J. Chem. Phys.** 130, 214511 (2009)
- 7) *Structure dynamics of the proton in liquid water probed with terahertz time-domain spectroscopy*  
K.J. Tielrooij, R.L.A. Timmer, H.J. Bakker, M. Bonn@  
**Phys. Rev. Lett.** 102, 198303 (2009)
- 6) *Terahertz dielectric relaxation of biological water confined in model membranes made of lyotropic phospholipids*  
D. Paparo, K.J. Tielrooij, H. Bakker, M. Bonn@  
**Mol. Cryst. Liq. Cryst.** 500, 108 (2009)
- 5) *Reorientation of HDO in liquid H<sub>2</sub>O at different temperatures: Comparison of first and second order correlation functions*  
K.J. Tielrooij, C. Petersen, Y.L.A. Rezus, H.J. Bakker@  
**Chem. Phys. Lett.** 471, 71 (2009)

4) *Effect of confinement on proton-transfer reactions in water nanopools*

K.J. Tielrooij, M.J. Cox, H.J. Bakker<sup>@</sup>

**ChemPhysChem** 10, 245 (2009)

3) *Experimental signature of phonon-mediated spin relaxation*

T. Meunier, I. V. Vink, L. H. Willems van Beveren, K.J. Tielrooij, R. Hanson, F. H. L. Koppens, H. P. Tranitz, W. Wegscheider, L. P. Kouwenhoven, L. M. K. Vandersypen<sup>@</sup>

**Phys. Rev. Lett.** 98, 126601 (2007)

2) *High fidelity measurement of singlet-triplet state in a quantum dot*

T. Meunier, K.J. Tielrooij, I.T. Vink, F.H.L. Koppens, H.P. Tranitz, W. Wegscheider, L.P. Kouwenhoven, L.M.K. Vandersypen<sup>@</sup>

**Phys. Stat. Sol. (b)** 243, 3855-3858 (2006)

1) *Driven coherent oscillations of a single electron spin in a quantum dot*

F.H.L. Koppens<sup>@</sup>, C. Buizert, K.J. Tielrooij, I.T. Vink, K.C. Nowack, T. Meunier, L.P. Kouwenhoven, L.M.K. Vandersypen<sup>@</sup>

**Nature** 442, 766-771 (2006)

## Outreach

3) In Spanish: *Conversión de luz en electricidad usando grafeno*

K.J. Tielrooij

**Revista de física** 29-3, 30 (2015)

2) In Dutch: *Het effect van ionen op waterdynamica: één plus één is geen twee!*

K.J. Tielrooij

**Nederlands Tijdschrift voor Natuurkunde (NTvN)** 77-3, 4 (2011)

1) In Dutch: *Water als ultrasnelle achtbaan voor protonen*

K.J. Tielrooij

**Nederlands Tijdschrift voor Natuurkunde (NTvN)** 75-9, 9 (2009)