

# Curriculum vitae

Prof. Dr. Jan Lipfert

Prof. Dr. Jan Lipfert  
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Date of birth: October 8, 1977  
Place of birth: Frankfurt am Main, Germany  
Citizenship: German

## Education

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- 1/2008 **Ph.D. in Physics**, *Stanford University, CA, USA*  
Specialization in theoretical and experimental biophysics (GPA 4.12/4.0)  
Thesis: “*Small-Angle X-Ray Scattering of RNA, Proteins, and Membrane Protein-Detergent Complexes*” Adviser: Sebastian Doniach; Co-advisers: Daniel Herschlag and Vijay S. Pande
- 5/2002 **Master of Science**, *University of Illinois at Urbana-Champaign, IL, USA*  
Graduate coursework in mathematical, biological and condensed matter physics (GPA 3.91/4.0)
- 6/2001 **M. Phil.** (“Filosofie Magister”), *Uppsala Universitet, Sweden*  
Major: physics; Minor: mathematics; Thesis: “*Radiation induced damage in serine phosphate - a model for strand breakage in DNA*” Advisers: Leif A. Erikson, Janos Hajdu
- 7/2000 **Undergraduate in Economics** (“Vordiplom”), *Ruprecht-Karls-Universität Heidelberg, Germany*  
Final grade: A- (1.2 on the German grading scale; ranked 1st of 135 students)
- 6/2000 **Undergraduate in Physics** (“Vordiplom”), *Ruprecht-Karls-Universität Heidelberg, Germany*  
Final grade: A (1.0 on the German grading scale)
- 6/1997 **High School Diploma** (“Abitur”), *Friedrichsgymnasium Kassel, Germany*  
Valedictorian; Final grade: A (1.0 on the German grading scale)

## Employment

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- since 9/2013 **Professor** (W2, tenure track) *Department of Physics, Ludwig-Maximilian-University Munich*
  - Developed multiplexed and temperature-controlled magnetic torque tweezers
  - Critically tested and developed all-atom, coarse-grained, and polymer models of DNA structure, mechanics, and dynamics using high-resolution single-molecule magnetic tweezers data
  - Revealed the free energy landscape and dynamics of retroviral integration at the single-molecule level using magnetic tweezers and AFM imaging
  - Developed and tested a Mo-anode based in-house setup for small-angle X-ray scattering (SAXS)
  - Established gold-labels as markers to enhance the resolution of SAXS-based *ab initio* structure reconstructions and as a molecular distance ruler using anomalous SAXS (ASAXS)
  - Pioneered the use of SAXS and time-resolved SAXS to reveal conformations, kinetics, and structural deformation of DNA origami devices in free solution
- 10/2007-7/2013 **Post doc** in the lab of Nynke Dekker, *Delft University of Technology, The Netherlands*  
Independent funding since 2/2010 through a €250,000 VENI grant
  - Pioneered novel magnetic tweezers to directly measure single-molecule torque and twist
  - Applied magnetic and optical tweezers to investigate DNA and RNA mechanical properties, protein-DNA and drug-DNA interactions, and topoisomerase-mediated supercoil removal
- 9/2002-10/2007 **Research Assistant** in the lab of Sebastian Doniach, *Stanford University, CA, USA*
  - Combined small-angle X-ray scattering and molecular modeling to investigate the solution structure of functional RNAs, peptides, proteins, and membrane protein-detergent complexes
  - Mastered RNA wet lab chemistry and electrostatic modeling
  - Developed large scale simulations of conformations and free energies in amyloidogenic peptides

## Internships and National Service

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1/2006 – 3/2006	<b>Research Assistant</b> , <i>Institut Pasteur, Paris, France</i> RNA electrostatics calculations; modeling of RNA thermodynamics and conformational changes
6/2003 – 8/2003	<b>Research Assistant</b> , <i>Institut Pasteur, Paris, France</i> Simulation of protein dynamics using stochastic differential equations
6/2002 – 8/2002	<b>Internship</b> as management consultant, <i>Siemens Management Consulting, Munich, Germany</i>
7/1999 – 8/1999	<b>Internship</b> as financial analyst, <i>Wintershall U.K. Ltd, London, U.K.</i>
6/1998 – 7/1998	<b>Internship</b> as assistant for quality control, <i>Alstom Energy Systems - SHG, Kassel, Germany</i>
7/1997 – 6/1998	<b>National service</b> as emergency medical technician, <i>Arbeiter-Samariter-Bund, Kassel, Germany</i>

## Honors and Awards

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12/2016	“Forschung@LMU” prize for undergraduate research for Pauline Kolbeck’s Bachelor thesis
11/2016	CeNS publication award in the category “scientific breakthrough”
07/2012	Offer of a tenure-track associate professorship, KU Leuven, Belgium (declined)
04/2011	Offer of a tenure-track assistant professorship, University of Twente, The Netherlands (declined)
2010-2013	<b>VENI postdoctoral fellowship</b> of the Dutch Organization for Scientific Research (NWO) (Three year grant with a total budget of 250,000 €)
11/2009	TU Delft postdoctoral fellowship (declined)
7/2007	Margaret C. Etter Student Lecturer Award, American Crystallographic Association
6/2006	Student travel award for the SAS 2006 meeting, Kyoto, Japan
2001 – 2004	Fellowship of the German National Merit Foundation (“ <b>Studienstiftung des deutschen Volkes</b> ”) (Fellowship awarded to the top 0.25% of German students)
2001 – 2002	<b>Fulbright Fellowship</b> for the academic year 2001/2002
2000 – 2001	Erasmus Fellowship for the academic year 2000/2001
1999 – 2001	Fellowship of the “ <b>Stiftung der deutschen Wirtschaft</b> ” (SDW)
1/1994	First place German National Latin Competition (“Bundeswettbewerb Fremdsprachen”)
1992 – 1996	Men’s rowing state champion in 1992-1996; 2nd and 6th place in nationals in 1994 and 1996

## Languages

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German (native), English (native-like; 5/C2), Dutch (fluent; 3/C1), French (fluent; 3/C1), Swedish (good knowledge; 2/B1), Spanish (basic knowledge; 1/A2), Latin (*Grades refer to the ILR/CEFR scales*)

## Further Training

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- Teaching skills workshop, Deutsche Schülerakademie, Bonn, 2009
- “Self-reflection and leadership” course, LMU Munich, 2013
- First aid / first responder course, LMU Munich, 2015
- Workshop “Effective Supervision of PhD Students”, LMU Munich, 2016

## Memberships and Professional Service

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- Memberships
  - Ordinary Member of the **Center for NanoScience (CeNS)** Munich since 2013
  - Member of the **Biophysical Society** since 2003
  - Member of the **German Physical Society (DPG)** since 1999
  - Student representative on the **Graduate Studies Committee**, Department of Physics, Stanford University, 2003-2007
- Service to the Department of Physics and the Center for Nanoscience (CeNS) at the LMU Munich
  - Organizer of the **Junior Nanotech Network graduate student exchange** with the University of Illinois 2017/18
  - Lecturer for the physics trial study program for high school students (“**Probestudium**”) 2017
  - Organizer of the **physics faculty retreat** 2017
  - Keynote speaker for the graduation ceremony 2016
  - Member of the **hiring committee in astrophysics** 2016
  - Member of the Master program **admissions committee** since 2016
  - Organizer of the **physics colloquium “meet the speaker”** seminar series since 2016
  - Member of the **selection committee** for the “Dr. Hans-Riegel-Fachpreis” (high school science prize) 2014 and 2015
- Organization of conferences and scientific meetings
  - Co-organizer of the **Small-Angle Scattering (SAS)** conference 2018, MI, USA
  - Co-organizer of the **LMU-TUM Physics Colloquium** since 2015
  - Member of the Program Committee for the **CeNS Venice Conference** 2015
  - Chair of the **Biophysical Society Molecular Biophysics Subgroup** 2012/2013
- **Editor** for *Scientific Reports* and *The Scientific World Journal*
- **Referee** for peer-reviewed journals  
*Adv. Colloid Interface Sci., Analytical Chemistry, Analytical Methods, Biochemistry, Biochimica et Biophysica Acta Biophysical J., Biopolymers, Chemical Physics, EMBO J., Eur. Phys. J. E, FEBS J., Gen. Physiol. Biophys., J. Am. Chem. Soc., J. Appl. Cryst., J. Chem. Phys., J. Phys. Chem., Magnetochemistry, Mol. Biol. Cell, Nature, Nature Chemical Biology, Nature Communications, Nature Methods, Nature Protocols, Nucleic Acids Research, Nanoscale, Methods, Phys. Rev. Lett., Phys. Rev. E, PLOS Comp. Biol., PLOS ONE, Proc. Natl. Acad. Sci. U.S.A., Protein Expression & Purification, Rev. Sci. Instrum., RNA, Scientific Reports, Sensors & Actuators: A. Physical, and The Scientific World Journal*
- **Reviewer / Referee** for
  - the Wellcome Trust, UK
  - the Flemish Research Foundation (FWO), Belgium
  - the Research Council of the KU Leuven, Belgium
  - the Flemish Agency for Innovation by Science and Technology (IWT), Belgium
  - the German Science Foundation (DFG), Germany
  - the “LOEWE” program of the State of Hesse, Germany
  - the National Research, Development, and Innovation Office (NKFIH), Hungary
  - the Stanford Synchrotron Radiation Laboratory proposal review panel, USA
  - the INCITE petascale-computation awards program (US Department of Energy), USA
  - the DOE-Basic Energy Sciences program (US Department of Energy), USA
  - the Oak Ridge National Laboratory Neutron Sciences proposal review committee, USA
  - the United States-Israel Binational Science Foundation, Israel & USA
  - tenure committees of several US universities

## Student Supervision and Mentorship

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- **Mentor** (“Vertrauensdozent”) for students of the German National Merit Foundation since 2014
- **Service on habilitation examination committees**  
Wilfried Grange (2015, “HDR”, Université Paris 7, France), Theobald Lohmüller (2016, LMU Munich)
- **Service on Ph.D. examination committees at the LMU Munich** (68 total)  
Alexander Buchner (2013), Michael Aumer (2014), Anna-Kristina Marel (2014), Stefan Rau (2014), Zazralt Magic (2014), Christoph Klingner (2014), Louis Reese (2014), Margherita Bonzini (2014), Franziska Schnell (2014), Jiayi Liu (2014), Svenja Lippok (2014), Christopher Kurz (2014), Jin Jeon (2015), Brendan L. Osberg (2015), Philipp Lang (2015), Silke Kirchner (2015), Giovanni Rosotti (2015), John Holland (2015), Thorben Seggebrock (2015), Christina Hennig (2015), Farzad Sekhavati (2015), Spas Nedev (2015), Samira Hertrich (2015), Waldemar Schneider (2015), Marc Diepold (2015), Florian Niederhofer (2016), Sebastian Thomas (2016), Richard D’Souza (2016), Chia-Yu Hu (2016), Manuel Wolff (2016), Lucia Garbini (2016), Heng-Ye Liao (2016), Miao Li (2016), Bert Pilles (2016), Michael Rampp (2016), Lizhe Liu (2016), Sonja Westermayer (2016), Tracy Li (2016), Anna McLeod (2016), Georg Urtl (2016), Felix Segerer (2016), Matthieu Portail (2016), Friederike Möller (2016), Tobias Preiß (2016), Andreas Reichert (2016), Carleen Kluger (2016), Henning Carstens (2016), Alessandro Ballone (2016), Marco Tazzari (2016), Jad C. Halimeh (2017), Peter Kroiß (2017), Constantin Schöler (2017), Sebastian Hettrich (2017), Judith Mittag (2017), Benedikt Ehard (2017), Anastasia Babynina (2017), Alexander M. Maier (2017), Benjamin März (2017), Daniel Cardenas (2017), Anne Reiner (2017), Julia Windmiller (2017), Ming-Yi Lin (2017), Carla Pernpeintner (2017), Anja Reiter (2017), Stefan Fischer (2017), Michel Kettner (2017), Thomas Simon (2017), Sergey Platonov (2017), Johannes B. Woehrstein (2017)
- **Service on Ph.D. examination committees outside of the LMU Munich** (6 total)  
Willem Vanderlinden (2012, KU Leuven, Belgium), Jordan Monnet (2014, Institut Monod / Université Paris 7, France), Thomas Gerling (2015, TU Munich, Germany), Maarten van Oene (2016, TU Delft, The Netherlands), Markus Jahn (2016, TU Munich, Germany), César López Pastrana (2017, CNB-CSIC, Madrid, Spain)
- **Supervisor for Ph.D. students and post docs** at the LMU Munich
  - Franziska Kriegel (PhD, 2014-2017; defense scheduled for December 7, 2017)
  - Linda K. Brützel (PhD, 2014-2017; defense scheduled for December 13, 2017)
  - Philipp U. Walker (PhD, since 2014)
  - Thomas Zettl (PhD, since 2014)
  - Willem Vanderlinden (post doc, since 2015)
  - Tine Brouns (Visiting PhD student, 2016)
- **Supervisor** for Bachelor and Master level students at the LMU Munich (25 total)  
Ann-Kathrin Wagner (Bachelor), Isabelle Stüwe (Bachelor), Jürgen Kreiter (Master), Johannes Dietrich (Bachelor), Niklas Ermann (Bachelor), Stella Capone (Master), Steffen Sedlak (Master), Julian Nguyen (Bachelor), Flavio Auer (Bachelor), Klara Kulenkampff (Bachelor), Johannes Stein (Bachelor), Annalena Salditt (Bachelor), Samuel Stubhan (Bachelor), Sophie Tschirpke (Master), Pauline Kolbeck (Bachelor), Aksana Svirydava (Bachelor), Sebastian Konrad (Master), Ann-Kathrin Wagner (Master), Lena Demmeler (Bachelor), Benjamin Haberl (Master; external at TU Munich), Klara Kulenkampff (Master; external at Cambridge University, UK), Johannes Emmerig (Master), Michael Hafner (Bachelor), Larissa Zott (Bachelor), Isabelle Stüwe (Master; external with Siemens), Nicole Popst (Bachelor)
- **Supervisor** for Bachelor and Master level students at the TU Delft (12 total)  
Ruaridh Forbes (summer student), Toivo Hensgens (Bachelor), Johannes Keegstra (Master), Renier Daudey (Master), Aafke van den Berg and Gerwin Koolstra (KNAW fellowship students), Tessa Jager (Master), Peter Jan Laverman (Master), Iris Koster (Bachelor), Maylon Rojer (Master), Sven Klijnhout (Bachelor), and Xiaomin Hao (Master)

## Teaching

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### LMU Munich

- Winter 2017
- **Physics 1 for Chemists and Biologists** (PN1) (in German; ca. 320 students)  
Introductory course on mechanics, fluids, and waves for chemistry and biology majors
  - **Research Topics in Biophysics** undergraduate seminar (in German)
- Summer 2017
- **Biophysics of Macromolecules** (in English; ca. 40 students)  
Graduate level course covering the breadth of molecular biophysics
- Winter 2016
- **Physics 1 for Chemists and Biologists** (PN1) (in German; ca. 320 students)  
Best course in the first semester chemistry curriculum by student evaluations
  - **Research Topics in Biophysics** undergraduate seminar (in German)
- Summer 2016
- **Physics 2 for Chemists** (PN2) (in German; ca. 150 students)  
Introductory course on electromagnetism, optics, and condensed matter for chemistry majors  
Lectures are available online through [[LMU cast](#)] or [[iTunes](#)]  
Best course in the second semester chemistry curriculum by student evaluations
- Winter 2015
- **Physics 1 for Chemists** (PN1) (in German; ca. 150 students)  
Introductory physics course on mechanics, fluids, and waves for chemistry majors  
Lectures are available online through [[LMU cast](#)] or [[iTunes](#)]  
Best course in the first semester chemistry curriculum by student evaluations
  - **Research Topics in Biophysics** undergraduate seminar (in German)
- Summer 2015
- **Biophysics of Macromolecules** (in English; ca. 40 students)
  - **Modern Experimental Methods in Biophysics** graduate seminar (in English)
- Winter 2014
- **Physics 1 for Chemists** (PN1) (in German; ca. 150 students)  
Introductory physics course on mechanics, fluids, and waves for chemistry majors  
Best course in the first semester chemistry curriculum by student evaluations
  - **Research Topics in Biophysics** undergraduate seminar (in German)
- Summer 2014
- **Biophysics of Macromolecules** (in English; ca. 50 students)
- Winter 2013
- **Physics 1 for Chemists** (PN1) (in German; ca. 150 students)  
Introductory physics course on mechanics, fluids, and waves for chemistry majors  
Best course in the first semester chemistry curriculum by student evaluations

### TU Delft

- Spring 2011
- Mentored **high school teachers in training** in developing a “Bionanoscience” teaching module for high school science classes (in Dutch)
- 2009-2011
- Designed and taught (in Dutch) a journal club on **physical methods in the biological sciences** as part of the TU Delft B.Sc. “**honors track**” program
- Summer 2009
- Designed and taught (in German) a **three week summer course** on bioinformatics for gifted high school seniors from five countries as part of the “Deutsche SchülerAkademie” program
- 2008-2009
- Lecturer for the section on polymer statistics for the Master-level course **Biophysics** (in English)

### Stanford University

- 2004-2007
- Supervisor for several undergraduate students in thesis research projects at Stanford University
  - Served as judge for high school science fairs in the Bay Area
- Spring 2004
- Teaching Assistant for **Computational Physics**  
Course on numerical methods and applications in the physical sciences (Prof. Cabrera)
- Winter 2003
- Teaching Assistant for **Mathematical Methods of Physics**  
Course on advanced mathematical techniques for 2nd and 3rd year physics majors (Prof. Fetter)
- Fall 2002
- Teaching Assistant for **Mechanics and Heat**  
Introductory course for non-physics majors (Prof. Wojcicki)

# List of Publications and Presentations

Prof. Dr. Jan Lipfert

Total citations: 2850, H-index: 30 (Google Scholar); total citations: 2100; H-index: 28 (ISI Web of Science)

## Journal Publications

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### 2017

56. Sabrina Simoncelli\*, Samuel C. Johnson, Franziska Kriegel, Jan Lipfert\*, and Jochen Feldmann  
“*Stretching and Heating Single DNA Molecules with Optically Trapped Gold-Silica Janus Particles*”  
**ACS Photonics**, in press (\*Joint corresponding authorship)
55. Franziska Kriegel, Niklas Ermann, Ruairidh Forbes, David Dulin, Nynke H. Dekker, and Jan Lipfert  
“*Probing the Salt Dependence of the Torsional Stiffness of DNA by Multiplexed Magnetic Torque Tweezers*”  
**Nucleic Acids Res.** 45:5920-5929 (2017)
54. Stefanos K. Nomidis, Franziska Kriegel, Willem Vanderlinden, Jan Lipfert, and Enrico Carlon  
“*Twist-Bend Coupling and the Torsional Response of Double-Stranded DNA*”  
**Phys. Rev. Lett.** 118:217801-6 (2017)
53. Steffen M. Sedlak, Linda K. Bruetzel, and Jan Lipfert  
“*Quantitative Evaluation of the Errors in Small-Angle X-Ray Scattering Measurements*”  
**J. Appl. Cryst.** 50:621-630 (2017)
52. Maarten M. van Oene, Laura E. Dickinson, Bronwen Cross, Francesco Pedaci, Jan Lipfert, and Nynke H. Dekker  
“*Applying torque to the Escherichia coli flagellar motor using magnetic tweezers*”  
**Scientific Reports** 7:43285 (2017)
51. Franziska Kriegel, Niklas Ermann, and Jan Lipfert  
“*Probing the Mechanical Properties, Conformational Changes, and Interactions of Nucleic Acids with Magnetic Tweezers*”  
**J Struct. Biol.** 197:26-36 (2017)

### 2016

50. Linda K. Bruetzel, Thomas Gerling, Steffen M. Sedlak, Wenjun Zheng, Hendrik Dietz, and Jan Lipfert  
“*Conformational Changes and Flexibility of DNA Devices Observed by Small-Angle X-Ray Scattering*”  
**Nano Letters** 16:4871-9 (2016)  
This article was selected for the 2016 issue of *ESRF Highlights*.
49. Jochen P. Müller, Achim Löff, Salome Mielke, Tobias Obser, Linda K. Bruetzel, Willem Vanderlinden, Jan Lipfert, Reinhard Schneppenheim, and Martin Benoit  
“*pH-Dependent Interactions in Dimers Govern Mechanics and Structure of von Willebrand Factor*”  
**Biophys. J.** 111:321-322 (2016)
48. Thomas Zettl, Rebecca S. Mathew, Sönke Seifert, Sebastian Doniach, Pehr A.B. Harbury, and Jan Lipfert  
“*Measuring Intra-Molecular Distances by Anomalous Small-Angle X-ray Scattering*”  
**Nano Letters** 16:5353-7 (2016)  
This article was featured on the cover of the September 2016 issue of *Nano Letters*.
47. Linda K. Bruetzel, Stefan Fischer, Steffen Sedlak, Annalena Salditt, Bert Nickel, and Jan Lipfert  
“*A Mo-Based In-House Source for Small-Angle X-Ray Scattering Measurements of Biological Macromolecules*”  
**Rev. Sci. Instrum.** 87:025103 (2016)
46. Jochen P. Müller, Salome Mielke, Achim Löff, Tobias Obser, Christof Beer, Linda Bruetzel, Diana A. Pippig, Willem Vanderlinden, Jan Lipfert, Reinhard Schneppenheim, and Martin Benoit  
“*Force sensing by the vascular protein von Willebrand Factor is tuned by a strong intermonomer interaction*”  
**Proc. Natl. Acad. Sci. U.S.A.** 113:1208-13 (2016)

## 2015

45. Magdalena Gebala, George M. Giambasu, Jan Lipfert, Namita Bisaria, Steve Bonilla, Guangchao Li, Darrin M. York, and Daniel Herschlag  
“*Cation-Anion Interactions within the Nucleic Acid Ion Atmosphere Revealed by Ion Counting Studies*”  
**J. Am. Chem. Soc.** 137:14705-15 (2015)
44. David Dulin, Thijs Cui, Jelmer Cnossen, Jan Lipfert, and Nynke H. Dekker  
“*High Spatiotemporal Resolution Magnetic Tweezers for Single-Molecule Force Spectroscopy: Calibration and Applications to DNA Dynamics*”  
**Biophys. J.** 109:2113-2125 (2015)
43. Korbinian Liebl, Tomas Drsata, Filip Lankas, Jan Lipfert, and Martin Zacharias  
“*Explaining the striking difference in twist-stretch coupling between DNA and RNA: A comparative molecular dynamics analysis*”  
**Nucleic Acids Res.** 43:10143-56 (2015)
42. Maarten M. van Oene, Laura E. Dickinson, Francesco Pedaci, Mariana Köber, David Dulin, Jacob W. J. Kerssemakers, Jan Lipfert\*, and Nynke H. Dekker\* (\*Joint corresponding authorship)  
“*Biological Magnetometry: Torque on Superparamagnetic Beads in Magnetic Fields*”  
**Phys. Rev. Lett.** 114:218301 (2015)
41. Rifka Vlijm, Mina Lee, Jan Lipfert, Alexandra Lusser, Cees Dekker, and Nynke H. Dekker  
“*Nucleosome assembly dynamics involve spontaneous fluctuations in the handedness of tetrasomes*”  
**Cell Rep.** 10:1-10 (2015)
40. Jan Lipfert, Maarten M. van Oene, Mina Lee, Francesco Pedaci, and Nynke H. Dekker  
“*Torque Spectroscopy for the Study of Rotary Motion in Biological Systems*”  
**Chemical Reviews** 115:1449-74 (2015)  
This article was featured on the cover of the February 2015 issue of *Chemical Reviews*.

## 2014

39. Zhongbo Yu, David Dulin, Jelmer Cnossen, Mariana Köber, Maarten van Oene, Orkide Ordu, Bojk Berghuis Jan Lipfert, and Nynke H. Dekker  
“*A Force Calibration Standard for Magnetic Tweezers*”  
**Rev. Sci. Instrum.** 85:123114 (2014)
38. Ryan Oliver, Jan Lipfert, Daniel Fox, Ryan Lo, Justin Kim, Sebastian Doniach, and Linda Columbus  
“*Tuning Micelle Dimensions and Properties with Binary Surfactant Mixtures*”  
**Langmuir** 30:13353-61 (2014)
37. Jan Lipfert, Gary M. Skinner, Johannes Keegstra, Toivo Hensgens, Tessa Jager, Mariana Köber, Zhongbo Yu, Serge Donkers, Fang-Chieh Chou, Rhiju Das, and Nynke H. Dekker  
“*Double-Stranded RNA under Force and Torque: Similarities to and Striking Differences from Double-Stranded DNA*”  
**Proc. Natl. Acad. Sci. U.S.A.** 111:15408-13 (2014)
36. Fang-Chieh Chou, Jan Lipfert, and Rhiju Das  
“*Blind Predictions of DNA and RNA Tweezers Experiments with Force and Torque*”  
**PLOS Computational Biology** 10:e1003756 (2014)
35. Willem Vanderlinden, Jan Lipfert, Jonas Demeulemeester, Zeger Debyser, and Steven De Feyter  
“*Structure, mechanics, and binding mode heterogeneity of LEDGF/p75-DNA nucleoprotein complexes as revealed by scanning force microscopy*”  
**Nanoscale** 6:4611-9 (2014)
34. Jan Lipfert, Mina Lee, Orkide Ordu, Jacob W.J. Kerssemakers, and Nynke H. Dekker  
“*Magnetic Tweezers for the Measurement of Twist and Torque*”  
**Journal of Visualized Experiments** 19:87 (2014)

33. Jan Lipfert, Sebastian Doniach, Rhiju Das, and Daniel Herschlag  
“*Understanding Nucleic Acid-Ion Interactions*”  
**Annual Review of Biochemistry** 83:813-41 (2014)

## 2013

32. Mina Lee, Jan Lipfert, Humberto Sanchez, Claire Wyman, and Nynke H. Dekker  
“*Structural and Torsional Properties of the RAD51-dsDNA Nucleoprotein Filaments*”  
**Nucleic Acids Res.** 41:7023-30 (2013)  
This article was featured on the cover of *Nucleic Acid Research* 41(14), August 2013.
31. Ryan C. Oliver, Jan Lipfert, Daniel A. Fox, Ryan H. Lo, Sebastian Doniach, and Linda Columbus  
“*Dependence of Micelle Size and Shape on Detergent Alkyl Chain Length and Head Group*”  
**PLOS ONE** 8:62488 (2013)
30. David Dulin, Jan Lipfert, M. Charl Moolman, and Nynke H. Dekker  
“*Studying Genomic Processes at the Single-Molecule Level: Introducing the Tools and Applications*”  
**Nature Reviews Genetics** 14:9-22 (2013)  
This article was featured on the cover of the January 2013 issue of *Nature Reviews Genetics*.

## 2012

29. Adelene Y.L. Sim, Jan Lipfert, Daniel Herschlag, and Sebastian Doniach  
“*Salt dependence of the radius of gyration and flexibility of single-stranded DNA in solution probed by small-angle x-ray scattering*”  
**Phys. Rev. E.** 86:021901 (2012)
28. Xander Janssen<sup>†</sup>, Jan Lipfert<sup>†</sup>, Tessa Jager, Renier Daudey, and Nynke H. Dekker  
“*Electromagnetic Torque Tweezers: A Versatile Approach for Measurement of Single-Molecule Twist and Torque*”,  
**Nano Letters** 12:3634-9 (2012) († Authors contributed equally)

## 2011

27. Jan Lipfert<sup>†</sup>, Jacob W.J. Kerssemakers<sup>†</sup>, Maylon Rojer, and Nynke H. Dekker  
“*A method to track rotational motion for use in single-molecule biophysics*”  
**Rev. Sci. Instrum.** 82:103707 (2011) († Authors contributed equally)  
This article was featured as a *Research Highlight* by the *Rev. Sci. Instrum.*, placed in the journal’s top 5 most read articles in November 2011, and was selected for the *Vir. J. Bio. Phys. Res.* vol. 22 issue 9 (2011).
26. Jan Lipfert<sup>†</sup>, Matthew Wiggin<sup>†</sup>, Jacob W.J. Kerssemakers, Francesco Pedaci, and Nynke H. Dekker  
“*Freely-Orbiting Magnetic Tweezers to Directly Monitor Changes in the Twist of Nucleic Acids*”  
**Nature Communications** 2:439 (2011) († Authors contributed equally)  
This article was featured by the Dutch Foundation for Fundamental Research on Matter and by the TU Delft “Watching DNA do the twist” (2011).

## 2010

25. Jan Lipfert, Jacob W.J. Kerssemakers, Tessa Jager, and Nynke H. Dekker  
“*Magnetic Torque Tweezers: Measuring Torsional Stiffness of DNA and RecA-DNA filaments*”  
**Nature Methods** 12:977-80 (2010)  
This article was featured as a *Physics Update* “A new twist on magnetic tweezers” in *Physics Today* (2010), as an article “DNA’s torque unravelled” in the *TU Delta* 31 (2010), and highlighted as a “Kunststuk” by the Dutch Foundation for Fundamental Research on Matter (2010).
24. Jan Lipfert, Sven Klijnhout, and Nynke H. Dekker  
“*Torsional Sensing of Small-Molecule Binding Using Magnetic Tweezers*”  
**Nucleic Acids Res.** 38:7122-32 (2010)



23. Aartjan J.W. te Velthuis, Jacob W.J. Kerssemakers, Jan Lipfert, and Nynke H. Dekker  
 “*Quantitative guidelines for force calibration through spectral analysis of magnetic tweezers data*”  
**Biophys. J.** 99:1292-302 (2010)
22. Jan Lipfert<sup>†</sup>, Adelene Y.L. Sim<sup>†</sup>, Daniel Herschlag, and Sebastian Doniach  
 “*Dissecting Electrostatic Screening, Specific Ion Binding, and Ligand Binding in an Energetic Model for Glycine Riboswitch Folding*”  
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21. Mona Ali, Jan Lipfert, Sönke Seifert, Daniel Herschlag, and Sebastian Doniach  
 “*The Ligand-Free State of the TPP Riboswitch, A Partially Folded RNA Structure*”  
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20. Vincent B. Chu, Jan Lipfert, Yu Bai, Vijay S. Pande, Sebastian Doniach, and Daniel Herschlag  
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19. Jan Lipfert, Xiaomin Hao, and Nynke H. Dekker  
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18. Linda Columbus, Jan Lipfert, K. Jambunathan, Daniel A. Fox, Adelene Y.L. Sim, Sebastian Doniach, and Scott A. Lesley  
 “*Mixing and Matching Detergents for Membrane Protein NMR Structure Determination*”  
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17. Vincent B. Chu, Yu Bai, Jan Lipfert, Daniel Herschlag, and Sebastian Doniach  
 “*A repulsive field: advances in the electrostatics of the ion atmosphere*”  
**Curr. Opin. Chem. Biol.** 12:619-25 (2008)
16. Jan Lipfert<sup>†</sup>, Jonathan Ouellet<sup>†</sup>, David G. Norman, Sebastian Doniach, and David M. J. Lilley  
 “*The Structure of the Complete VS Ribozyme in Solution by Small-Angle X-Ray Scattering*”  
**Structure** 16:1357-67 (2008) († Authors contributed equally)
15. Yu Bai, Vincent B. Chu, Jan Lipfert, Vijay S. Pande, Daniel Herschlag, and Sebastian Doniach  
 “*Critical assessment of nucleic acid electrostatics via experimental and computational investigation of an unfolded state ensemble*”  
**J. Am. Chem. Soc.** 130:12334-41 (2008)
14. Benjamin J. Spink, Sivaraj Sivaramakrishnan, Jan Lipfert, Sebastian Doniach, and James A. Spudich  
 “*Long Single alpha-Helical Tail Domains Bridge the Gap between Structure and Function of Myosin VI*”  
**Nature Struct. Mol. Biol.** 15:591-597 (2008)  
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13. Yu Bai, Kevin Travers, Vincent B. Chu, Jan Lipfert, Daniel Herschlag, and Sebastian Doniach  
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12. Jan Lipfert, Linda Columbus, Vincent B. Chu, Scott A. Lesley, and Sebastian Doniach  
 “*Size and Shape of Detergent Micelles by Small-Angle X-ray Scattering*”  
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11. Vincent B. Chu, Yu Bai, Jan Lipfert, Daniel Herschlag, and Sebastian Doniach  
 “*Evaluation of Ion Binding to DNA Duplexes Using a Size-Modified Poisson-Boltzmann Theory*”  
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10. Jan Lipfert, Vincent B. Chu, Yu Bai, Daniel Herschlag, and Sebastian Doniach  
 “*Low Resolution Models for Nucleic Acids from Small-Angle X-ray Scattering with Applications to Electrostatic Modeling*”  
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 “*Analysis of Small-Angle X-ray Scattering Data of Protein-Detergent Complexes by Singular Value Decomposition*”  
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8. Jan Lipfert and Sebastian Doniach  
 “*Small-Angle X-Ray Scattering from RNA, Proteins, and Protein Complexes*”  
**Ann. Rev. Biophys. Biomol. Struct.** 36:307-27 (2007)
7. Jan Lipfert, Rhiju Das, Vincent B. Chu, Madhuri Kudaravalli, Nathan Boyd, Daniel Herschlag, and Sebastian Doniach  
 “*Structural Transitions and Thermodynamics of a Glycine-Dependent Riboswitch from Vibrio cholerae*”  
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 This article was selected as an *APS Science Highlight* “Watching a Glycine Riboswitch Switch” (March 2007) and classified as “of special interest” (*Curr. Opin. Struct. Biol.* 17:562-71, 2007) and as “of outstanding interest” (*Curr. Opin. Microbiol.* 10:176-81, 2007)

## 2006

6. Gautam Dantas, Alexander L. Watters, Bradley Lunde, Ziad Eletr, Nancy Isern, Jan Lipfert, Sebastian Doniach, Brian Kuhlman, Barry L. Stoddard, Gabriele Varani, and David Baker  
 “*Mis-translation of a Computationally Designed Protein Yields an Exceptionally Stable Homodimer: Implications for Protein Engineering and Evolution*”  
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5. Jan Lipfert, Ian S. Millett, Sönke Seifert, and Sebastian Doniach  
 “*A Sample Holder for Small-Angle X-ray Scattering Static and Flow Cell Measurements*”  
**Rev. Sci. Instrum.** 77:046108 (2006)  
 This article was featured in *Vir. J. Bio. Phys. Res.* vol. 11 issue 8 (2006) and in *APS Science, the Advanced Photon Source Annual Report 2005*, p. 153-154 (2006)
4. Linda Columbus, Jan Lipfert, Heath Klock, Ian S. Millett, Sebastian Doniach, and Scott Lesley  
 “*Expression, Purification, and Characterization of Thermotoga maritima  $\alpha$ -Helical Membrane Proteins for Structure Determination*”  
**Protein Sci.** 15:1-15 (2006)

## 2005

3. Bojan Zagrovic, Jan Lipfert, Erik J. Sorin, Ian S. Millett, Wilfred F. van Gunsteren, Sebastian Doniach, and Vijay S. Pande  
 “*Unusual Compactness of a Polyproline type II Structure*”  
**Proc. Natl. Acad. Sci. U.S.A.** 102:11698-11703 (2005)
2. Jan Lipfert, Joel Franklin, Fang Wu, and Sebastian Doniach  
 “*Protein Misfolding and Amyloid Formation for the Peptide GNNQQNY from Yeast Prion Protein Sup35: Simulation by Reaction Path Annealing*”  
**J. Mol. Biol.** 349:648-658 (2005)

## 2004

1. Jan Lipfert, Jorge Llano, and Leif A. Eriksson  
 “*Radiation-Induced Damage in Serine Phosphate - Insights into a Mechanism for Direct DNA Strand Breakage*”  
**J. Phys. Chem. B** 108:8036-8042 (2004)

## Contributions to Books

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5. Sebastian Doniach and Jan Lipfert  
“*Small and Wide Angle X-ray Scattering of Biological Macromolecules and Their Complexes in Solution*”  
**Comprehensive Biophysics**, 1:376-397 (2012)
4. Sebastian Doniach and Jan Lipfert  
“*Use of Small Angle X-ray Scattering (SAXS) to Characterize Conformational States of Functional RNAs*”  
**Methods Enzymol.** 469:237-251 (2009)
3. Jan Lipfert, Daniel A. Koster, Igor D. Vilfan, Susanne Hage, and Nynke H. Dekker  
“*Single Molecule Magnetic Tweezers Studies of Type IB Topoisomerases*”  
**Methods in Mol. Biol.** 582:71-89 (2009)
2. Igor D. Vilfan, Jan Lipfert, Daniel A. Koster, Serge G. Lemay, and Nynke H. Dekker  
“*Magnetic Tweezers for Single-Molecule Experiments*”  
P. Hinterdorfer and A. van Oijen (eds.), **Handbook of Single-Molecule Biophysics**, Springer (2009)
1. Jan Lipfert, Daniel Herschlag, and Sebastian Doniach  
“*Riboswitch Conformations Revealed by Small-Angle X-ray Scattering*”  
**Methods in Mol. Biol.** 540:141-59 (2009)

## Other Publications: Teaching, Commentaries, Patents

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12. Interview with Peter Becker, Joachim Winter, and Jan Lipfert  
“*Die Kultur des Austauschs*”  
**Einsichten**, December (2016) (in German)
11. Jan Lipfert and Nynke H. Dekker  
“*De RNA-helix lijkt niet altijd op die van DNA*”  
**Nederlands Tijdschrift voor Natuurkunde**, June (2015) (in Dutch)
10. Jan Lipfert  
“*The Anti-Fraud Counselor*”, **TU Delta**, 6:15 (2012)
9. Jan Lipfert  
“*Fraud!*”, **Kavli Newsletter**, 4:13 (2012)
8. Jan Lipfert  
“*Will the top sectors go to Mars?*”, **Kavli Newsletter**, 3:11 (2011)
7. Jan Lipfert  
“*Science in the Exponential Growth Phase*”, **Kavli Newsletter** 2:9 (2011)
6. Jan Lipfert  
“*The Curious Use of Latin and Greek Antiquity in Dutch Academia*”, **Kavli Newsletter** 1:7 (2011)
5. Jan Lipfert, Jacob W.J. Kerssemakers, and Nynke H. Dekker  
“*Method for determining one or more characterizing features of a macromolecule and an apparatus for carrying out said method.*”, **WO Patent** 2011162603 (2011), **US patent** 20130102083 (2013)
4. S. Menze, C. Menze, Jan Lipfert, B. Menze, and G. Harsch  
“*Der Vorfahr aus der Bronzezeit*”, **Praxis der Naturwissenschaften - ChiS** 5 (59):6 (2010) (in German)
3. Jan Lipfert  
“*The Newest Science not so new?*”, **TU Delta**, 5 (2010)
2. Jan Lipfert  
Comment on “*Refueling*”, **Europhysics News** 39:37 (2009)
1. Jan Lipfert and Miriam Spering  
“*Deutsches Hochschulwesen: Navigare necesse est?*”, **Ideenwettbewerb des CHE** (2003) (in German)

## Talks at International Conferences

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25. Small-Angle Scattering 2018 conference, Traverse City, MI, USA, October 2018
24. German Physical Society (DPG) meeting, Berlin, Germany, March 2018
23. SFB 863 *Forces in Biomolecular Systems* workshop, Venice, Italy, September 2016
22. Conference on *RNA Structure, Function, Dynamics*, Trieste, Italy, May 2016
21. iPoLS *Physics of Living Systems* annual meeting, Arlington, VA, July 2015
20. The Crick Institute “Inspiring Careers” symposium, London, UK, May 2015
19. German Physical Society (DPG) meeting, Dresden, Germany, April 2014
18. CECAM workshop on *Biological Molecules under Non-Natural Conditions*, Stuttgart, Germany, March 2014
17. Biophysical Society meeting, San Francisco, CA, February 2014
16. CeNS workshop, Venice, Italy, September 2013
15. International summer school *Nicholas Cabrera*, Madrid, Spain, July 2013
14. Biophysical Society meeting, Philadelphia, PA, February 2013
13. German Physical Society (DPG) meeting, Dresden, Germany, March 2011
12. Biophysical Society meeting, “DNA, RNA Structure & Conformation” session, Baltimore, MD, March 2011
11. Biophysical Society meeting, “Molecular Biophysics” subgroup, Baltimore, MD, March 2011
10. Zing Nucleic Acids conference, Puerto Morelos, Mexico, November 2010
9. Gordon Research Conference (GRC) on *Single Molecule Approaches to Biology*, Lucca, Italy, June 2010
8. Panelist *Early Careers Committee*, Biophysical Society meeting, San Francisco, CA, February 2010
7. Small-Angle Scattering 2009 conference, Oxford, UK, September 2009
6. Biophysical Society meeting, Boston, MA, February 2009
5. Biophysical Society meeting, “RNA Folding” session, Long Beach, CA, February 2008
4. Biophysical Society meeting, “Single Molecule Biophysics I” session, Long Beach, CA, February 2008
3. SSRL and LCLS users’ meeting, Menlo Park, CA, October 2007
2. American Crystallographic Association meeting, Salt Lake City, UT, July 2007
1. Small-Angle Scattering 2006 conference, Kyoto, Japan, July 2006

## Talks at National Conferences and Colloquia

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33. Physical Chemistry colloquium, Munich, Germany, January 2018
32. Colloquium at the Spanish National Centre for Biotechnology (CNB-CSIC), Madrid, Spain, November 2017
31. Klaus Schulten Memorial Symposium, Munich, Germany, October 2017
30. Keynote address at the physics class of 2016 graduation ceremony, Munich, Germany, November 2016
29. “Careers in Science” outreach lecture, Munich, Germany, November 2016
28. “Unitag” outreach lecture on nano- and biophysics, Munich, Germany, October 2016
27. IRTG Colloquium, Freiburg, Germany, June 2016
26. IRTG Colloquium, Strasbourg, France, June 2016
25. Symposium Single-Molecule Detection Methods, Delft, The Netherlands, March 2016
24. Todai-LMU (Tokyo-Munich) “Cooperation in Physics” Workshop, Tokyo, Japan, February 2016
23. Colloquium at Biozentrum Basel, Basel, Switzerland, November 2015
22. Biomolecular Optics seminar, Munich, Germany, July 2015
21. “Münchener Physik Kolloquium” (TUM-LMU Physics Colloquium), Munich, Germany, December 2014
20. “Nanoday” public science event, Munich, Germany, November 2014
19. “Physik Modern” Seminar, Munich, Germany, November 2014
18. Todai-LMU (Tokyo-Munich) “Cooperation in Physics” Workshop, Munich, Germany, October 2014
17. Panelist at the CeNS career event on “Dual Career Couples”, Munich, Germany, July 2014
16. NIM graduate program summer retreat, Tegernsee, Germany, June 2014
15. SFB 863 *Forces in Biomolecular Systems* seminar, Munich, Germany, May 2014
14. “DNA node” seminar, Munich, Germany, March 2014
13. Colloquium at the Institute for Computational Physics, University of Stuttgart, Germany, May 2013
12. Molecular Biophysics Meeting, Veldhoven, The Netherlands, October 2011
11. “Forces in Biomolecular Systems” symposium, Ringberg Castle, Germany, July 2011
10. Seminar at the Peter Grünberg Institute, Research Center Jülich, Germany, February 2011
9. Paris-Stanford Exchange meeting, Paris, France, September 2010
8. Molecular Biophysics meeting, Veldhoven, The Netherlands, September 2009
7. Structural Biology seminar, Institut Pasteur, Paris, France, February 2009
6. Physics colloquium, Reed College, Portland, OR, April 2007
5. Molecular Biophysics seminar, Stanford University, CA, February 2007
4. Structural Biology seminar, Institut Pasteur, Paris, France, March 2006
3. PPG meeting, Stanford University, CA, October 2005
2. Molecular Biophysics seminar, Stanford University, CA, November 2004
1. Javits meeting, San Francisco, CA, April 2004

## Poster Presentations (first author only)

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21. Small-Angle Scattering conference, Berlin, Germany, September 2015
20. CeNS Workshop, Venice, Italy, September 2015
19. Single-Molecule Biophysics conference, Aspen, CO, January 2013
18. Molecular Biophysics meeting, Veldhoven, The Netherlands, October 2012
17. Biophysical Society meeting, San Diego, CA, February 2012
16. Molecular Biophysics meeting, Veldhoven, The Netherlands, October 2010
15. Gordon Research Conference (GRC) on *Single Molecule Approaches to Biology*, Lucca, Italy, June 2010
14. Biophysical Society meeting, San Francisco, CA, February 2010
13. Small-Angle Scattering 2009 conference, Oxford, UK, September 2009
12. Molecular Biophysics meeting, Veldhoven, The Netherlands, September 2009
11. Molecular Biophysics meeting, Veldhoven, The Netherlands, September 2008
10. Gordon Research Conference (GRC) on *Single Molecule Approaches to Biology*, New London, NH, August 2008
9. RNA Society meeting, Berlin, Germany, August 2008
8. TOPO2008 meeting, Norwich, UK, July 2008
7. Biophysical Society meeting, Baltimore, MD, March 2007
6. Biomedical Computation at Stanford (BCATS) meeting, October 2006
5. Biomedical Computation at Stanford (BCATS) meeting, October 2005
4. Biophysical Society meeting, Long Beach, CA, February 2005
3. Biomedical Computation at Stanford (BCATS) meeting, October 2004
2. Biophysical Society meeting, Baltimore, MD, January 2004
1. Biomedical Computation at Stanford (BCATS) meeting, October 2003

Munich, October 2017