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## PROFESSIONAL EXPERIENCES

- Since 2019 Head of the research group nanoFRET at the Laboratoire Chimie Organique, Bioorganique, Analyse et Réactivité (COBRA), Mont-Saint-Aignan, France
- 2016 - 2019 Head of the research group Nano Bio Photonics at the Institute for Integrative Biology of the Cell (I2BC), Orsay, France
- 2010 - 2016 Head of the research group Nano Bio Photonics at the Institut d'Electronique Fondamentale (IEF), Orsay, France
- Since 2010 Full Professor at Université Paris-Sud (department of physics), Orsay, France (PR2: 09/2010-08/2017; PR1: since 09/2017)
- 2008 - 2010 Head of the group NanoPolyPhotonics at the Fraunhofer Institute for Applied Polymer research in Potsdam-Golm, Germany
- 2007 - 2008 Scientist and project leader of the EU-funded project "POC4life – Multiparametric Quantum Dot Bioassay for Point-of-Care Diagnosis" at the University of Potsdam in Physical Chemistry (group of Prof. Löhmannsröben)

## EDUCATION

- 2001 - 2007 Ph.D. in Physical Chemistry at the University of Potsdam (Germany), Advisor: Prof. Dr. Hans-Gerd Löhmannsröben. Ph.D. thesis: „Lanthanides and Quantum Dots: Time-Resolved Laser Spectroscopy of Biochemical Förster Resonance Energy Transfer (FRET) Systems“; PhD degree: Dr. rer. nat.; Grade: magna cum laude
- 1996 - 2001 Engineering Diploma (Dipl. Ing. FH) in Medical Physics at the University of Applied Sciences Berlin (Germany), Apr. 2001

## ADMINISTRATIVE & INSTITUTIONAL RESPONSIBILITIES

- Editor of the book "FRET – Förster Resonance Energy Transfer. From Theory to Applications", Wiley-VCH, Germany 2014, ISBN 978-3-527-32816-1.
- Guest editor for Sensors (IF 3.3) Special Issues "Sensing with Quantum Dots" (2011) and "FRET Biosensors" (2015) and for IEEE Journal of Selected Topics in Quantum Electronics (IF 4.9) – 3 Special Issues "Nanobiophotonics" (2014, 2019, 2021).

- Editorial board member of *Microchimica Acta* (IF 6.2, Springer Nature), *Methods and Applications in Fluorescence* (IF 2.8, IOP Publishing), *Analysis & Sensing* (launched in 2020, Wiley - ChemPubSoc Europe).
- Former editorial board member of *Sensors* (MDPI), *Chemosensors* (MDPI), *Biosensors* (MDPI), *Journal of Biosensors & Bioelectronics* (HILARIS), and *World Journal of Methodology* (Baishideng).
- Program Committee - Colloidal Nanocrystals for Biomedical Applications VI-XV, BIOS 2011-2020 SPIE Photonics West, San Francisco, CA, USA.
- Scientific Advisory Board – NaNaX5 Conference, 07. - 11.05.2012, Fuengirola, Spain.
- Co-organizer of the 2nd meeting on Förster resonance energy transfer in life sciences, MPI of Biophysical Chemistry Göttingen, April 2016.
- Co-organizer of the Symposium “NM7: Nanostructure-Based Optical Bioprobes - Advances, Trends and Challenges in Optical and Multimodular Bioimaging and Sensing” at the MRS Fall Meeting 2017 (Nov 26 – Dec 1) Boston, MA, USA.
- Co-organizer of the 3rd Conference on Properties, Design, and Applications of Upconversion Nanomaterials (UPCON 2020) Compiègne (Paris), France, October 2020.
- Management Committee Member of COST Action CM1403 (The European upconversion network)
- External member of the Research Commission of the Faculty of Pharmacology (Université Paris-Sud).
- Reviewer for scientific journals: *Chemical Reviews*, *Chemical Society Reviews*, *Angewandte Chemie International Edition*, *Journal of the American Chemical Society*, *Nature Nanotechnology*, *Nanoletters*, *NanoToday*, *ACS Nano*, *Advanced Materials* (and related journals), *Chemistry of Materials*, *Small*, *ChemComm*, *Nanoscale*, *Coordination Chemistry Reviews*, *Bioconjugate Chemistry*, *Analytical Chemistry*, *ACS Applied Materials and Interfaces*, *ACS Sensors*, *Scientific Reports*, *Nature Communications*, *Analytical and Bioanalytical Chemistry*, and others.
- Reviewer for funding agencies and institutions: ERC – European Research Council; DFG – Deutsche Forschungsgemeinschaft, Germany; ANR – Agence Nationale de la Recherche, France; NSF – National Science Foundation, USA; NIH – National Institute of Health, USA; STW – Dutch Technology Foundation, Netherlands; NCN – National Science Centre, Poland; Nanyang Technological University Singapore (Tenure track evaluation); The Wellcome Trust, UK; British Lung Foundation, UK; NSERC – Natural Sciences and Engineering Research Council, Canada; Instituto Serrapilheira, Brasil; Marie-Sklodowska Curie Actions, Europe; SNSF – Swiss National Science Foundation, Switzerland; NWO – The Dutch Research Council, Netherlands; and others.

## RESEARCH INTERESTS

- FRET – Förster Resonance Energy Transfer.
- Spectrotemporally multiplexed photoluminescence in the UV-Vis-NIR spectral region.
- Fluorophores: Quantum dots, lanthanides, dyes, fluorescent proteins.
- Nanobiotechnology: Development of nanobioconjugates for biosensing applications.
- Nano-Biosensing: Development of multiplexed photonic biosensors.
- Nano-Biodynamics: Development of FRET-sensors for multiplexed molecular ruler applications.
- In-vitro diagnostics: Development of multiplexed homogeneous FRET bioassays.

- Imaging: FRET and FLIM based in-vitro and in-vivo biosensor technology development.

## SCIENTIFIC ACHIEVEMENTS

### Academic record (h-index: 39)

108 publications, 8 book chapters, 6 patents

### Selected prizes and awards

- Nachwuchswissenschaftlerpreis 2010 des Landes Brandenburg (Young researcher award 2010 of the federal state of Brandenburg, Germany – 20,000 Euros)
- Member of the Institut Universitaire de France (IUF) from 10/2014 - 09/2019

## SUPERVISION ACTIVITIES

- 14 postdocs, 17 PhD students, 7 master students, 13 internship students, and 3 technicians (cf. TEAM on [www.nanofret.com](http://www.nanofret.com) website for details)

## GRANTS AND FELLOWSHIPS

### Externally Funded Research Projects (~5.2 mio. Euros total group funding)

(post-doctoral and student fellowships and projects with funding <50,000 Euros are not included in the list)

- From December 2020 (42 months) – Principle Investigator in the ANR-project “LaPin - Lanthanide-Loaded Polymer Nanoparticles for Autofluorescence-Free In Vitro and In Vivo Biosensing and Imaging” with 4 partners from France.
- Since November 2020 (36 months) – Co-Coordinator of the Réseaux d’intérêts normands (RIN) and XL-Chem Research Graduate School project “Nanosuspect - Nanoparticle-surface-spectroscopy – Probing nanosurface-environment interactions by Förster Resonance Energy Transfer (FRET) from lanthanide complexes to quantum dots” in collaboration with the University of Copenhagen (Denmark).
- Since November 2020 (36 months) – Co-Coordinator of the Université Franco-Italienne (UFI) project “FRET-up - Nanoparticules de conversion ascendante pour la biodétection et l’imagerie de fluorescence / Nanoparticelle in grado di dare upconversion per biosensing e imaging basato su fluorescenza” in collaboration with the University of Padova (Italy).
- Since September 2019 (36 months) – Coordinator of the Réseaux d’intérêts normands (RIN) Chair of Excellence project “COBRA-FRET - Détection et imagerie de fluorescence sensible et multiplexé pour l’analyse des acides nucléiques”.
- Since December 2016 (48 months) – Coordinator of the ANR-project “neutrinos - Nanoparticle-Enhanced Ultrasensitive Tracking of Biological Interactions by Optical Sensing” with 3 partners from France.
- Since October 2016 (48 months) – Principle Investigator in the ANR-project “PhenX - Molecular mech-anism of Phage-encoded activation of Xer recombination” with 4 partners from France.
- June 2017 (18 months) – Coordinator of the ANR-project “amplify - Multiplexed diagnostics of microRNA using ultra-sensitive homogeneous FRET detection”.

- March 2016 (36 months) – Principle Investigator in the Horizon 2020 (FET Open) project “PROSECO - Protein Sequencing using optical single molecule real-time detection” with 5 partners (3 academic, 2 SME) from 4 countries.
- January 2016 (36 months) – Coordinator of the M-ERA.NET project “nanohype - Nanoparticle Hybrid Materials Using Plasmonic-Enhanced Upconversion FRET for Multiplexed Sensing and Optical Barcoding” with 4 academic partners from 3 countries.
- July 2016 (18 months) - Coordinator of the project Idex Paris-Saclay project “Quanticorps - Conjugaison directe entre des boîtes quantiques et des anticorps pour des immunodosages de FRET ultrasensibles”.
- July 2016 (18 months) - Coordinator of the project Labex NanoSaclay/PALM project “AMPLINOSTIC - Development of a diagnostic kit for multiplexed, homogeneous, and amplified detection of micro-RNAs”.
- May 2015 (18 months) – Coordinator of the LabEx NanoSaclay project “NanoTRAM - FRET and FLIM nanobiosensors for characterizing nanoparticle-mediated drug delivery and drug efficacy inside the cell” with 2 academic partners.
- March 2015 (12 months) - Coordinator of the project IDEX Paris-Saclay project “DARN - Homogeneous and multiplexed detection of microRNA”.
- 2015 - 2019: Member of the Institut Universitaire de France and project “MultiSens - Multiplexed Homogeneous Micro-RNA Sensors and Singlet-Oxygen-Transfer Immunoassays”.
- October 2012 (42 months) - Principle investigator in the ANR-project “NanoFRET - Quantum Dot-based Highly Sensitive Multiplexed FluoroImmunoAssays” with 4 partners (3 academic, 1 SME) from France.
- October 2011 (36 months) – Principle investigator in the project (within the French excellence initiative “Investissements d’avenir”) “NanoCTC - Phenotypic and molecular characterization of circulating tumoral cells relying on the use of photoluminescent nanoparticles to quantify proteins and nucleic acids of interest” with 8 partners (7 academic, 1 SME) from the Paris region “Ile de France”.
- January 2011 (60 months) – Principle investigator in the Innovative Medicines Initiative (IMI) project “OncoTrack - Methods for systematic next generation oncology biomarker development” with 11 partners (7 academic, 4 SME) from 5 countries and 8 partners from the European Federation of Pharmaceutical Industries and Associations (EFPIA). Website: [www.oncotrack.org](http://www.oncotrack.org).
- October 2009 (42 months) - Coordinator of the EC-funded (FP7) project “NANOGNOSTICS - Quantum Dot-Based Highly Sensitive Immunoassays for Multiplexed Diagnostics of Alzheimer’s Disease”; 10 partners (8 academic, 2 SME) from 5 countries, Website: [www.nanognostics.eu](http://www.nanognostics.eu).
- September 2009 (33 months) – Principle investigator in Eurostars project “CHIPOC - Development of an Innovative Miniature Bio-Chip Reader for Whole Blood Diagnostic Analysis”; 3 partners (1 academic, 2 SME).
- January 2007 (42 months) – Principle investigator in EC-funded (FP6) project “POC4life - Multiparametric Quantum Dot Bioassay for Point-of-care Diagnosis”; 8 partners (5 academic, 3 SME) from 5 countries.
- July 2003 (42 months) – Researcher in BMWi-funded project “Krankheiten auf der Spur: Fluoreszenzimmunoanalyse mit miniaturisierten Festkörperlasern (FIA-LAS)”; 8 partners (2 academic, 6 SME) from 2 countries.

## TEACHING ACTIVITIES

- Since Sept. 2010: Teaching as full professor in the departments of Physics, Chemistry, Medicine, and Pharmacology (Université Paris-Sud) – 192 hours per year
- 2002 – 2010: Labcourses, seminars and supervision of 2 master students and 5 graduate students in physical chemistry and photochemistry at the University of Potsdam.

## PUBLICATIONS



### Reviews and Perspectives

1. M. Cardoso Dos Santos, W.R. Algar, I.L. Medintz, and N. Hildebrandt. Quantum Dots for Förster Resonance Energy Transfer (FRET). *TrAC – Trends in Analytical Chemistry* **2020**, 125, 115819.
2. C. Chen and N. Hildebrandt. Resonance energy transfer to gold nanoparticles: NSET defeats FRET. *TrAC – Trends in Analytical Chemistry* **2020**, 123, 115748.
3. W.R. Algar, N. Hildebrandt, S.S. Vogel, and I.L. Medintz. FRET as a biomolecular research tool—understanding its potential while avoiding pitfalls. *Nature Methods* **2019**, 16 (9), 815-829.
4. X. Qiu and N. Hildebrandt. A clinical role for Förster resonance energy transfer in molecular diagnostics of disease. *Expert Review of Molecular Diagnostics* **2019**, 19 (9), 767-771.
5. Z.S. Pehlivan, M. Torabfam, H. Kurt, C. Ow-Yang, N. Hildebrandt, and M. Yüce. Aptamer and nanomaterial based FRET biosensors: a review on recent advances (2014–2019). *Microchimica Acta* **2019**, 186 (8), 563.
6. N. Hildebrandt and O. Tagit. Colloidal Nanoparticles for Signal Enhancement in Optical Diagnostic Assays. *Journal of Nanoscience and Nanotechnology* **2018**, 18, 6671–6679.

7. O. Tagit and N. Hildebrandt. Fluorescence Sensing of Circulating Diagnostic Biomarkers Using Molecular Probes and Nanoparticles. *ACS Sensors* **2017**, 2 (1), 31-45.
8. N. Hildebrandt, C. M. Spillmann, W. R. Algar, T. Pons, M. H. Stewart, E. Oh, K. Susumu, S. A. Díaz, J. B. Delehanty, and I. L. Medintz. Energy Transfer with Semiconductor Quantum Dot Bioconjugates: A Versatile Platform for Biosensing, Energy Harvesting, and Other Developing Applications. *Chemical Reviews* **2017**, 117 (2), 536-711.
9. M. Sy, A. Nonat, N. Hildebrandt, and L.J. Charbonnière. Lanthanide-based luminescent biolabelling. *Chemical Communications* **2016**, **52**, 5080-5095.
10. M. Cardoso Dos Santos and N. Hildebrandt. Recent Developments in Lanthanide-to-Quantum Dot FRET Using Time-Gated Fluorescence Detection and Photon Upconversion. *TrAC – Trends in Analytical Chemistry* **2016**, 84, 60-71.
11. D. Geißler and N. Hildebrandt. Recent developments in FRET diagnostics using quantum dots. *Analytical and Bioanalytical Chemistry* **2016**, 408 (17), 4475-4483.
12. K.D. Wegner and N. Hildebrandt. Quantum Dots: Bright and Versatile In vitro and In vivo Fluorescence Imaging Biosensors. *Chemical Society Reviews* **2015**, 44, 4792-4834.
13. N. Hildebrandt, K. D. Wegner, and W. R. Algar. Luminescent Terbium Complexes: Superior Förster Resonance Energy Transfer Donors for Flexible and Sensitive Multiplexed Biosensing. *Coordination Chemistry Reviews* **2014**, 273–274, 125–138.
14. D. Geißler, S. Lindén, K. Liermann, K. D. Wegner, L. J. Charbonnière, and N. Hildebrandt. Lanthanides and Quantum Dots as Förster Resonance Energy Transfer Agents for Diagnostics and Cellular Imaging. *Inorganic Chemistry* **2014**, 53, 1824-1838.
15. W. R. Algar, H. Kim, I. L. Medintz, and N. Hildebrandt. Emerging non-traditional Förster resonance energy transfer configurations with semiconductor quantum dots: Investigations and applications. *Coordination Chemistry Reviews* **2014**, 263-264, 65-85.
16. B. Hötzer, I.L. Medintz, N. Hildebrandt. Fluorescence in Nanobiotechnology – Sophisticated Fluorophores for Novel Applications. *Small* **2012**, 8 (15), 2297-2326.
17. Z. Jin, N. Hildebrandt. Quantum dots for in vitro diagnostics and cellular imaging. *Trends in Biotechnology* **2012**, 30 (7), 394-403.
18. N. Hildebrandt. Biofunctional Quantum Dots: Controlled Conjugation for Multiplexed Biosensors. *ACS Nano* **2011**, 5(7), 5286–5290.
19. D. Geißler, N. Hildebrandt. Lanthanide Complexes in FRET Applications. *Current Inorganic Chemistry* **2011**, 1, 17-35.
20. L.J. Charbonnière, N. Hildebrandt. Lanthanide Complexes and Quantum Dots: A Bright Wedding for Resonance Energy Transfer. *European Journal of Inorganic Chemistry* **2008**, 3241–3251.
21. N. Hildebrandt, H.-G. Löhmannsröben. Quantum Dot Nanocrystals and Supramolecular Lanthanide Complexes - Energy Transfer Systems for Sensitive In Vitro Diagnostics and High Throughput Screening in Chemical Biology. *Current Chemical Biology* **2007**, 1(2), 167-186.

### Research papers

22. S. Bhuckory, K. D. Wegner, X. Qiu, Y.-T. Wu, T. L. Jennings, A. Incamps, and N. Hildebrandt. Triplexed CEA-NSE-PSA Immunoassay Using Time-Gated Terbium-to-Quantum Dot FRET. *Molecules* **2020**, 25, 3679.
23. M. Cardoso Dos Santos, I. Colin, G. Ribeiro Dos Santos, K. Susumu, M. Demarque, I.L. Medintz, and N. Hildebrandt. Time-gated FRET nanoprobe for autofluorescence-free long-term in vivo imaging of developing zebrafish. *Advanced Materials* **2020**, 32 (39), 2003912.
24. C. Charpentier, V. Cifliku, J. Goetz, A. Nonat, C. Cheignon, M. Cardoso Dos Santos, L. Francés-Soriano, K.-L. Wong, L.J. Charbonnière, and N. Hildebrandt. Ultrabright terbium nanoparticles for FRET biosensing and in-situ imaging of epidermal growth factor receptors. *Chemistry – A European Journal* **2020**, DOI: 10.1002/chem.202002007.

25. T. Hallaj, M. Amjadi, X. Qiu, K. Susumu, I.L. Medintz, and N. Hildebrandt. Terbium–To–Quantum Dot Förster Resonance Energy Transfer for Homogeneous and Sensitive Detection of Histone Methyltransferase Activity. *Nanoscale* **2020**, 12, 13719-13730.
26. J. Xu, J. Guo, N. Golob-Schwarzl, J. Haybaeck, X. Qiu, and N. Hildebrandt. Single-measurement multiplexed quantification of microRNAs from human tissue using catalytic hairpin assembly and Förster resonance energy transfer. *ACS Sensors* **2020**, 5(6), 1768–1776.
27. C. Leger, A. Yahia-Ammar, K. Susumu, I.L. Medintz, A. Urvoas, M. Valerio-Lepiniec, P. Minard, and N. Hildebrandt. Picomolar Biosensing and Conformational Analysis Using Artificial Bidomain Proteins and Terbium-to-Quantum Dot Förster Resonance Energy Transfer. *ACS Nano* **2020**, 14, 5956-5967.
28. L. Francés-Soriano, N. Peruffo, M.M. Natile, and N. Hildebrandt. Er<sup>3+</sup>-to-dye energy transfer in DNA-coated core and core/shell/shell upconverting nanoparticles with 980 nm and 808 nm excitation of Yb<sup>3+</sup> and Nd<sup>3+</sup>. *Analyst* **2020**, 145, 2543-2553.
29. L. Labrador-Páez, C. Mingoies, F. Jaque, P. Haro-González, H. Bazin, J. M. Zwier, D. Jaque, and N. Hildebrandt. pH-dependence of water-anomaly temperature investigated by Eu(III)-cryptate luminescence. *Analytical and Bioanalytical Chemistry* **2020**, 412, 73-80.
30. X. Qiu, O. Guittet, C. Mingoies, N. El Banna, M.-E. Huang, M. Lepoivre, and N. Hildebrandt. Quantification of Cellular Deoxyribonucleoside Triphosphates by Rolling Circle Amplification and Förster Resonance Energy Transfer. *Analytical Chemistry* **2019**, 91(22), 14561-14568.
31. E. Porret, M. Jourdan, B. Gennaro, C. Comby-Zerbino, F. Bertorelle, V. Trouillet, X. Qiu, C. Zoukimian, D. Boturyn, N. Hildebrandt, R. Antoine, J.-L. Coll, and X. Le Guével. Influence of the Spatial Conformation of Charged Ligands on the Optical Properties of Gold Nanoclusters. *The Journal of Physical Chemistry C* **2019**, 123(43), 26705-26717.
32. M. Dekaliuk, X. Qiu, F. Troalen, P. Busson, and N. Hildebrandt. Discrimination of the V600E Mutation in BRAF by Rolling Circle Amplification and Förster Re-sonance Energy Transfer. *ACS Sensors* **2019**, 4(10), 2786-2793.
33. C. Chen, B. Corry, L. Huang, and N. Hildebrandt. FRET-modulated multi-hybrid nanoparticles for brightness-equalized single-wavelength barcoding. *Journal of the American Chemical Society* **2019**, 141(28), 11123-11141.
34. M. Cardoso Dos Santos, A. Runser, H. Bartenlian, A.M. Nonat, L.J. Charbonnière, A.S. Klymchenko, N. Hildebrandt, and A. Reisch. Lanthanide-Complex-Loaded Polymer Nanoparticles for Background-Free Single-Particle and Live-Cell Imaging. *Chemistry of Materials* **2019**, 31(11), 4034-4041.
35. J. Guo, C. Mingoies, X. Qiu, and N. Hildebrandt. Simple, Amplified, and Multiplexed Detection of MicroRNAs Using Time-Gated FRET and Hybridization Chain Reaction. *Analytical Chemistry* **2019**, 91, 3101-3109.
36. J. Guo, X. Qiu, C. Mingoies, J.R. Deschamps, K. Susumu, I.L. Medintz, and N. Hildebrandt. Conformational Details of Quantum Dot-DNA Resolved by Förster Resonance Energy Transfer Lifetime Nanoruler. *ACS Nano* **2019**, 13, 505-514.
37. C. Léger, T. Di Meo, M. Aumont-Nicaise, C. Velours, D. Durand, I. L. de la Sierra-Gallay, H. van Tilbeurgh, N. Hildebrandt, M. Desmadril, A. Urvoas, M. Valerio-Lepiniec, and P. Minard. Ligand-induced conformational switch in an artificial bidomain protein scaffold. *Scientific Reports* **2019**, 9:1178.
38. A. Petreto, M. Cardoso Dos Santos, O. Lefebvre, G. Ribeiro Dos Santos, P. Ponzellini, D. Garoli, F. De Angelis, M. Ammar, and N. Hildebrandt. Optimizing FRET on aluminum surfaces via controlled attachment of fluorescent dyes. *ACS Omega* **2018**, 3, 18867-18876.
39. X. Qiu, J. Xu, J. Guo, A. Yahia-Ammar, N.-I. Kapetanakis, I. Duroux-Richard, J.J. Unterluggauer, N. Golob-Schwarzl, C. Regeard, C. Uzan, S. Gouy, M. DuBow, J.

- Haybaeck, F. Apparailly, P. Busson, and N. Hildebrandt. Advanced microRNA-based cancer diagnostics using amplified time-gated FRET. *Chemical Science* **2018**, *9*, 8046-8055.
40. P. A. Rojas-Gutierrez, S. Bhuckory, C. Mingoies, N. Hildebrandt, C. E. DeWolf, and J. A. Capobianco. A Route to Triggered Delivery via Photocontrol of Lipid Bilayer Properties Using Lanthanide Upconversion Nanoparticles. *ACS Applied Nano Materials* **2018**, *1* (9), 5345-5354.
  41. C. Chen, L. Ao, Y.-T. Wu, V. Cifliku, M. Cardoso Dos Santos, E. Bourrier, M. Delbianco, D. Parker, J. Zwier, L. Huang, and N. Hildebrandt. Single-Nanoparticle Cell Barcoding by Tunable FRET from Lanthanides to Quantum Dots. *Angewandte Chemie International Edition* **2018**, *57*, 13686-13690.
  42. Y.-T. Wu, X. Qiu, S. Lindbo, K. Susumu, I.L. Medintz, S. Hober, and Niko Hildebrandt. Quantum Dot Based FRET Immunoassay for HER2 Using Ultrasmall Affinity Proteins. *Small* **2018**, *14*, 1802266.
  43. C. Chen, C. Midelet, S. Bhuckory, N. Hildebrandt, and M. H. V. Werts. Nanosurface Energy Transfer from Long-Lifetime Terbium Donors to Gold Nanoparticles. *The Journal of Physical Chemistry C* **2018**, *122*, 17566-17574.
  44. X. Qiu, J. Guo, J. Xu, and N. Hildebrandt. Three-Dimensional FRET Multiplexing for DNA Quantification with Attomolar Detection Limits. *Journal of Physical Chemistry Letters* **2018**, *9*, 4379-4384.
  45. G. Annio, T. L. Jennings, O. Tagit, and N. Hildebrandt. Sensitivity-Enhancement of FRET Immunoassays by Multiple-Antibody Conjugation on Quantum Dots. *Bioconjugate Chemistry* **2018**, *29*, 2082-2089.
  46. M. Cardoso Dos Santos, J. Goetz, H. Bartenlian, K.-L. Wong, L.J. Charbonnière, and N. Hildebrandt. Autofluorescence-free Live-cell Imaging Using Terbium Nanoparticles. *Bioconjugate Chemistry* **2018**, *29*, 1327-1334.
  47. Y. Ishida, I. Akita, T. Pons, T. Yonezawa, and N. Hildebrandt. Real-Space Investigation of Energy Transfer Through Electron Tomography. *The Journal of Physical Chemistry C* **2017**, *121*(51), 28395-28402.
  48. S. Bhuckory, E. Hemmer, Y.-T. Wu, A. Yahia-Ammar, F. Vetrone, and N. Hildebrandt. Core or shell? Er<sup>3+</sup> FRET donors in upconversion nanoparticles. *European Journal of Inorganic Chemistry* **2017**, 5186-5195.
  49. E. Porret, L. Sancey, A. Martín-Serrano, M. Montañez, R. Seemann, A. Yahia-Ammar, H. Okuno, F. Gomez, A. Ariza, N. Hildebrandt, J.-B. Fleury, J.-L. Coll, X. Le Guével. Hydrophobicity of Gold Nanoclusters Influences their Interactions with Biological Barriers. *Chemistry of Materials* **2017**, *29*(17), 7497-7506.
  50. S. Díaz, G. Lasarte Aragones, S. Buckhout-White, X. Qiu, E. Oh, K. Susumu, J. Melinger, A. Huston, N. Hildebrandt, and I.L. Medintz. Bridging Lanthanide to Quantum Dot Energy Transfer with a Short Lifetime Organic Dye. *The Journal of Physical Chemistry Letters* **2017**, *8* (10), 2182-2188.
  51. X. Qiu, J. Guo, Z. Jin, A. Petreto, I. L. Medintz, and N. Hildebrandt. Multiplexed Nucleic Acid Hybridization Assays Using Single-FRET-Pair Distance-Tuning. *Small* **2017**, *13*, 1700332.
  52. M. Amjadi, T. Hallaj, H. Asadollahi, Z. Song, M. de Frutos, and N. Hildebrandt. Facile synthesis of carbon quantum dot/silver nanocomposite and its application for colorimetric detection of methimazole. *Sensors and Actuators B: Chemical* **2017**, *244*, 425-432.
  53. S. Bhuckory, L. Mattera, K. D. Wegner, X. Qiu, Y-T. Wu, L. J. Charbonnière, P. Reiss, and N. Hildebrandt. Direct conjugation of antibodies to the ZnS shell of quantum dots for FRET immunoassays with low picomolar detection limits. *Chemical Communications* **2016**, *52*, 14423-14425.
  54. X. Qiu, K. D. Wegner, Y.-T. Wu, P.M.P. van Bergen en Henegouwen, T. L. Jennings, and N. Hildebrandt. Nanobodies and Antibodies for Duplexed EGFR/HER2 Immunoassays Using Terbium-to-Quantum Dot FRET. *Chemistry of Materials* **2016**, *28*, 8256-8267.
  55. H. S. Afsari, M. Cardoso dos Santos, S. Lindén, T. Chen, X. Qiu, P. M. P. van Bergen en Henegouwen, T. L. Jennings, K. Susumu, I. L. Medintz, N. Hildebrandt, L. W. Miller, Time-gated FRET nanoassemblies for rapid and sensitive intra- and extracellular fluorescence imaging. *Science Advances* **2016**, *2*, e1600265.
  56. L. Mattera, S. Bhuckory, K.D. Wegner, X. Qiu, F. Agnese, C. Lincheneau, T. Senden, D. Djurado, L.J. Charbonnière, N. Hildebrandt, and P. Reiss. Compact quantum dot-



- antibody conjugates for FRET immunoassays with subnanomolar detection limits. *Nanoscale* **2016**, *8*, 11275-11283.
57. A. Yahia Ammar, D. Sierra, F. Mérola, N. Hildebrandt, and X. Le Guével. Self-Assembled Gold Nanoclusters for Bright Fluorescence Imaging and Enhanced Drug Delivery. *ACS Nano* **2016**, *10* (2), 2591-2599.
  58. S. Bhuckory, O. Lefebvre, X. Qiu, K. D. Wegner, and N. Hildebrandt. Evaluating quantum dot performance in homogeneous FRET immunoassays for prostate specific antigen. *Sensors* **2016**, *16*(2), 197 (11 pages).
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### Thesis

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### Patents

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