Dr Niko HILDEBRANDT

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PROFESSIONNAL EXPERIENCES

Since 2022	Full Professor at Université de Rouen Normandie, Rouen, France
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
2010 - 2022	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: 48)

129 publications, 9 book chapters, 8 patents

Selected prizes and awards

- Nachwuchswissenschaftlerpreis 2010 des Landes Brandenburg (Young researcher award 2010 of the federal state of Brandenburg, Germany – 20,000 Euros private price money)
- Member of the Institut Universitaire de France (IUF) from 10/2014 - 09/2019
- Research Chair of Excellence 2019-2022 of the Région Normandie (France) (IUF) from 10/2014 - 09/2019
- Ranked among the 2020 top 2% scientists worldwide concerning citation impact (career-long & 2019 calendar year): https://doi.org/10.1371/journal.pbio.3000918
- Ranked among the 2021 top 2% scientists worldwide (top 1% in Nanoscience & Nanotechnology) concerning citation impact (career-long & 2020 calendar year): https://doi.org/10.17632/btchxktzyw.3
- Ranked among the 2022 top 2% scientists worldwide (top 1% in Nanoscience & Nanotechnology) concerning citation impact (career-long & 2021 calendar year): https://doi.org/10.17632/btchxktzyw.4
- Ranked as a top-rated worldwide expert by "expertscape": 1st in terbium, 2nd in quantum dots, 4th in FRET, 5th in fluorescence spectroscopy.

SUPERVISION ACTIVITIES

- 15 postdocs, 19 PhD students, 7 master students, 15 internship students, and 3 technicians (*cf.* TEAM on www.nanofret.com website for details)

GRANTS AND FELLOWSHIPS

Externally Funded Research Projects (>6 mio. Euros total group funding)

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

- From September 2022 (28 months) – Principal Investigator in the NRF Brain Pool Program "Plasmon-enhanced FRET for ultrasensitive multiplexed biosensing" with 1 partner from South Korea.
- From February 2022 (42 months) – Principal Investigator in the ANR-project "MANBAMM - Multicomponent Analysis of Nano-Bio-Assemblies using Microfluidic Modulation" with 3 partners from France.
- From January 2022 (18 months) – Coordinator of the CARNOT-I2C-project "MULTIPLEX - Multiplexed Fluorescence Biosensing with Semiconductor and Polymer Nanoparticles" with 1 partner from Germany.

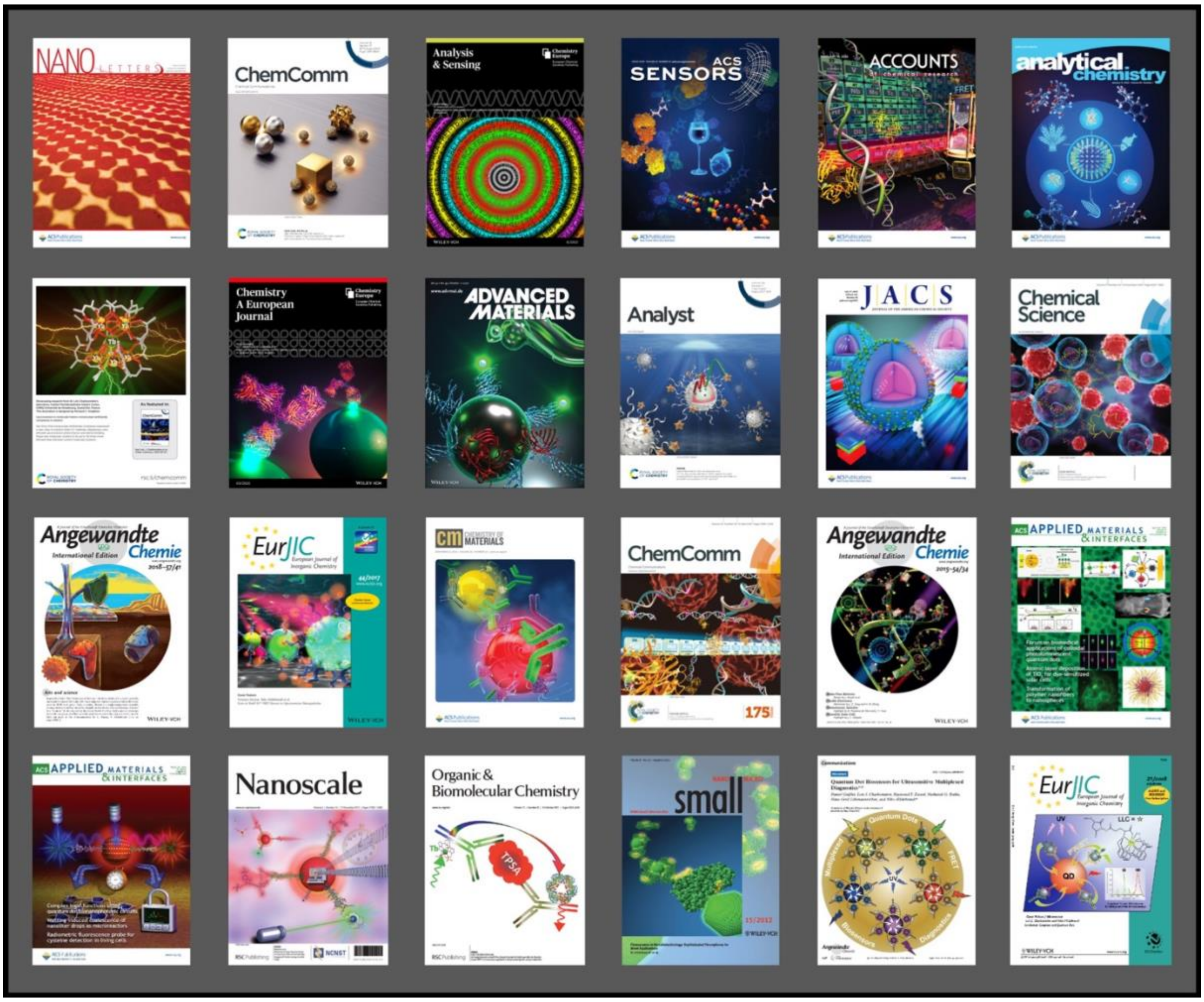
- From October 2021 (18 months) – Coordinator of the INSERM-project "ACTION - Advanced Diagnostic of Colorectal Cancer: Liquid Biopsy Screening Using Time-Gated FRET" with 2 partners from France.
- From October 2021 (36 months) – Coordinator of the Labex-SYNORG-project "FRETiculous - Lanthanide-to-quantum dot energy transfer for advanced biosensing and live-cell imaging" with 1 partner from USA.
- 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 "PROSEQO - 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.
- 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.
- 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. N. Hildebrandt, M. Lim, N. Kim, D. Y. Choi, and J.-M. Nam. Plasmonic quenching and enhancement: metal–quantum dot nanohybrids for fluorescence biosensing. *Chemical Communications* **2023**, 59, 2352-2380. https://doi.org/10.1039/D2CC06178C

2. H. H. Gorris, Z. Farka, and N. Hildebrandt. A Primer on Luminescence Sensing. *Analysis & Sensing* **2023**, 3(2), e202200113. https://doi.org/10.1002/anse.202200113

3. X. Qiu, J. Xu, M. Cardoso Dos Santos, and N. Hildebrandt. Multiplexed Biosensing and Bioimaging Using Lanthanide-Based Time-Gated Förster Resonance Energy Transfer. *Accounts of Chemical Research* **2022**, 55(4), 551-564. https://doi.org/10.1021/acs.accounts.1c00691

4. Y. Li, R. Su, H. Li, J. Guo, N. Hildebrandt, and C. Sun. Fluorescent Aptasensors: Design Strategies and Applications in Analyzing Chemical Contamination of Food. *Analytical Chemistry* **2022**, 94 (1), 193–224. https://doi.org/10.1021/acs.analchem.1c04294

5. 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. https://doi.org/10.1016/j.trac.2020.115819

6. C. Chen and N. Hildebrandt. Resonance energy transfer to gold nanoparticles: NSET defeats FRET. *TrAC – Trends in Analytical Chemistry* **2020**, 123, 115748. https://doi.org/10.1016/j.trac.2019.115748

7. 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. https://doi.org/10.1038/s41592-019-0530-8

8. 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. https://doi.org/10.1080/14737159.2019.1649144

9. 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. https://doi.org/10.1007/s00604-019-3659-3

10. N. Hildebrandt and O. Tagit. Colloidal Nanoparticles for Signal Enhancement in Optical Diagnostic Assays. *Journal of Nanoscience and Nanotechnology* **2018**, 18, 6671-6679. https://doi.org/10.1166/jnn.2018.15748

11. O. Tagit and N. Hildebrandt. Fluorescence Sensing of Circulating Diagnostic Biomarkers Using Molecular Probes and Nanoparticles. *ACS Sensors* **2017**, 2 (1), 31-45. https://doi.org/10.1021/acssensors.6b00625

12. 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. https://doi.org/10.1021/acs.chemrev.6b00030

13. M. Sy, A. Nonat, N. Hildebrandt, and L.J. Charbonnière. Lanthanide-based luminescent biolabelling. *Chemical Communications* **2016**, **52**, 5080-5095. https://doi.org/10.1039/C6CC00922K

14. 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. https://doi.org/10.1016/j.trac.2016.03.005

15. D. Geißler and N. Hildebrandt. Recent developments in FRET diagnostics using quantum dots. *Analytical and Bioanalytical Chemistry* **2016**, 408 (17), 4475-4483. https://doi.org/10.1007/s00216-016-9434-y

16. 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. https://doi.org/10.1039/C4CS00532E

17. 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. https://doi.org/10.1016/j.ccr.2014.01.020

18. 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. https://doi.org/10.1021/ic4017883

19. 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. https://doi.org/10.1016/j.ccr.2013.07.015

20. B. Hötzer, I.L. Medintz, N. Hildebrandt. Fluorescence in Nanobiotechnology – Sophisticated Fluorophores for Novel Applications. *Small* **2012**, 8 (15), 2297-2326. https://doi.org/10.1002/smll.201200109

21. Z. Jin, N. Hildebrandt. Quantum dots for in vitro diagnostics and cellular imaging. *Trends in Biotechnology* **2012**, 30 (7), 394-403. https://doi.org/10.1016/j.tibtech.2012.04.005

22. N. Hildebrandt. Biofunctional Quantum Dots: Controlled Conjugation for Multiplexed Biosensors. *ACS Nano* **2011,** 5(7), 5286–5290. https://doi.org/10.1021/nn2023123

23. D. Geißler, N. Hildebrandt. Lanthanide Complexes in FRET Applications. *Current Inorganic Chemistry* **2011**, 1, 17-35. https://doi.org/10.2174/1877944111101010017

24. 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. https://doi.org/10.1002/ejic.200800332

25. 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. https://doi.org/10.2174/2212796810701020167

Research papers

26. F. Pini, L. Francés-Soriano, V. Andrigo, M. M. Natile, and N. Hildebrandt. Optimizing Upconversion Nanoparticles for FRET Biosensing. *ACS Nano* **2023**, 17(5), 4971-4984. https://doi.org/10.1021/acsnano.2c12523

27. S. Bhuckory, S. Lahtinen, N. Höysniemi, J. Guo, X. Qiu, T. Soukka, and N. Hildebrandt. Understanding FRET in Upconversion Nanoparticle Nucleic Acid Biosensors. *Nano Letters* **2023**, 23(6), 2253-2261. https://doi.org/10.1021/acs.nanolett.2c04899

28. J.-H. Choi, G. Fremy, T. Charnay, N. Fayad, J. Pécaut, S. Erbek, N. Hildebrandt, V. Martel-Frachet, A. Grichine, and O. Sénèque. Luminescent Peptide/Lanthanide(III) Complex Conjugates with Push–Pull Antennas: Application to One- and Two-Photon Microscopy Imaging. *Inorganic Chemistry* **2022**, 61(50), 20647-20689. https://doi.org/10.1021/acs.inorgchem.2c03646

29. C. Liu, X. Wei, H. Zhang, M. Zhang, X.-F. Yu, N. Hildebrandt, Q.-Y. Luo, and Z. Jin. Nucleic Acid Hybridization Enhanced Luminescence for Rapid and Sensitive RNA and DNA Based Diagnostics. *Analytical Chemistry* **2022**, 94(46), 15964-15970. https://doi.org/10.1021/acs.analchem.2c02673

30. E. Hatem, N. El Banna, A. Heneman-Masurel, D. Baïlle, L. Vernis, S. Riquier, M.-P. Golinelli-Cohen, O. Guittet, C. Vallières, J.-M. Camadro, X. Qiu, N. Hildebrandt, M. Lepoivre, and M.-E. Huang. Novel insights into redox-based mechanisms for auranofin-induced rapid cancer cell death. *Cancers* **2022**, 14(19), 4864. https://doi.org/10.3390/cancers14194864

31. L. Haye, P. I. Diriwari, A. Alhalabi, T. Gallavardin, A. Combes, A. S. Klymchenko, N. Hildebrandt, X. Le Guevel, and A. Reisch. Enhancing Near Infrared II Emission of Gold Nanoclusters via Encapsulation in Small Polymer Nanoparticles. *Advanced Optical Materials* **2022**, 2201474. https://doi.org/10.1002/adom.202201474

32. H.-J. Fu , L. Luo, Y. Wang, C.-L. Wang, H. Wang, Y.-D. Shen, H.-T. Lei, N. Hildebrandt, and Z.-L. Xu. Enzyme-Induced Silver Deposition on Gold Nanorods for Naked-Eye and Smartphone Detection of Acrylamide in Food. *ACS Applied Nano Materials* **2022**, 5(9), 12915-12925. https://doi.org/10.1021/acsanm.2c02763

33. M. Dekaliuk, P. Busson, and N. Hildebrandt. Isothermal Rolling Circle Amplification and Lanthanide-Based FRET for Femtomolar Quantification of MicroRNA. *Analysis & Sensing* **2022**, e202200049, 2(6), e202200049. https://doi.org/10.1002/anse.202200049

34. R. Su, Y.-T. Wu, S. Doulkeridou, X. Qiu, T. J. Sorensen, K. Susumu, I. L. Medintz, P. M. P. van Bergen en Henegouwen, and N. Hildebrandt. A Nanobody-on-Quantum Dot Displacement Assay for Rapid and Sensitive Quantification of the Epidermal Growth Factor Receptor (EGFR). *Angewandte Chemie International Edition* **2022**, 61(33), e202207797. https://doi.org/10.1002/anie.202207797

35. L. Francés-Soriano, N. Estebanez, J. Pérez-Prieto, and N. Hildebrandt. DNA-coated upconversion nanoparticles for sensitive nucleic acid FRET biosensing. *Advanced Functional Materials* **2022**, 202201541, 32(37), 2201541. https://doi.org/10.1002/adfm.202201541

36. H.-J. Fu, R. Su, L. Luo, Z.-J. Chen, T. J. Sorensen, N. Hildebrandt, and Z. L. Xu. Rapid and Wash-Free Time-Gated FRET Histamine Assays Using Antibodies and Aptamers. *ACS Sensors* **2022**, 7(4), 1113–1121. https://doi.org/10.1021/acssensors.2c00085

37. F. Pini, L. Francés-Soriano, N. Peruffo, A. Barbon, N. Hildebrandt, and M. M. Natile. Spatial and Temporal Resolution of Luminescence Quenching in Small Upconversion Nanocrystals. *ACS Applied Materials & Interfaces* **2022**, 14(9), 11883-11894. https://doi.org/10.1021/acsami.1c23498

38. R. C. Knighton, L. K. Soro, L. Francés-Soriano, A. Rodríguez-Rodríguez, G. Pilet, M., Lenertz, C. Platas-Iglesias, N. Hildebrandt, and L.J. Charbonnière. Cooperative Luminescence and Cooperative Sensitisation Upconversion of Lanthanide Complexes in Solution. *Angewandte Chemie International Edition* **2022**, 61(4), e202113114. https://doi.org/10.1002/anie.202113114

39. J. Xu, X. Qiu, and N. Hildebrandt. When Nanoworlds Collide: Implementing DNA Amplification, Nanoparticles, Molecules, and FRET into a Single MicroRNA Biosensor. *Nano Letters* **2021**, 21(11), 4802–4808. https://doi.org/10.1021/acs.nanolett.1c01351

40. M. Amjadi, T. Hallaj, and N. Hildebrandt. A sensitive homogeneous enzyme assay for euchromatic histone-lysine- N-methyltransferase 2 (G9a) based on terbium-to-quantum dot time-resolved FRET. *BioImpacts* **2021**, 11(3), 173-179. https://doi.org/10.34172/bi.2021.23

41. L. Francés-Soriano, M. Leino, M. Cardoso Dos Santos, D. Kovacs, K. E. Borbas, O. Söderberg, and N. Hildebrandt. In Situ Rolling Circle Amplification Förster Resonance Energy Transfer (RCA-FRET) for Washing-Free Real-Time Single-Protein Imaging. *Analytical Chemistry* **2021**, 93 (3), 1842–1850. https://doi.org/10.1021/acs.analchem.0c04828

42. R. Knighton, L. K. Soro, A. Lecointre, G. Pilet, A. Fateeva, L. Pontille, L. Francés-Soriano, N. Hildebrandt, and L. J. Charbonniere. Upconversion in molecular hetero-nonanuclear lanthanide complexes in solution. *Chemical Communications* **2021**, 57, 53-56. https://doi.org/10.1039/D0CC07337G

43. 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. https://doi.org/10.3390/molecules25163679

44. M. Cardoso Dos Santos, I. Colin, G. Ribeiro Dos Santos, K. Susumu, M. Demarque, I.L. Medintz, and N. Hildebrandt. Time-gated FRET nanoprobes for autofluorescence-free long-term in vivo imaging of developing zebrafish. *Advanced Materials* **2020**, 32 (39), 2003912. https://doi.org/10.1002/adma.202003912

45. 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**, 26 (64), 14602-14611.

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