

Peter Hildebrandt
List of publications

Textbooks

1. Siebert F, Hildebrandt P (2007) *Vibrational Spectroscopy in Life Science*. Wiley-VCH, Weinheim.

Review articles

1. Hildebrandt P (2023) Vibrational spectroscopy of phytochromes. *Biomolecules* **13**, 1007. <https://doi.org/10.3390/biom13061007>
2. Caserta G, Zuccarello L, Barbosa C, Silveira CM, Moe E, Katz S, Hildebrandt P, Zebger I, Todorovic S (2022) Unusual structures and unknown roles of FeS clusters in metalloenzymes seen from a resonance Raman spectroscopic perspective. *Coord. Chem. Rev.* **452**, 214287. <https://doi.org/10.1016/j.ccr.2021.214287>
3. Silveira C, Zuccarello L, Barbosa C, Caserta G, Zebger I, Hildebrandt P, Todorovic S (2021) Molecular Details on Multiple Cofactor Containing Redox Metalloproteins Revealed by Infrared and Resonance Raman Spectroscopies, *Molecules* **26**, 4852. <https://doi.org/10.3390/molecules26164852>
4. Buhrke D, Hildebrandt P (2019) Probing structure and reaction dynamics of proteins using time-resolved Resonance Raman spectroscopy. *Chem. Rev.* **120**, 3577-3630. <https://doi.org/10.1021/acs.chemrev.9b00429>
5. Völler J, Biava H, Hildebrandt P, Budisa N (2017) An expanded genetic code for probing the role of electrostatics in enzyme catalysis by vibrational Stark spectroscopy. *Biochim. Biophys. Acta.* **1861**, 3053-3059. <https://doi.org/10.1016/j.bbagen.2017.02.009>
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8. Sezer M, Millo D, Weidinger I, Zebger I, Hildebrandt P (2012) Analysing the catalytic processes of immobilised redox enzymes by vibrational spectroscopies, *IUBMB Life* **64**, 455-464. <https://doi.org/10.1002/iub.1020>
9. Horch, M, Lauterbach, L, Lenz, O, Hildebrandt, P, Zebger, I (2012) NAD(H)-Coupled Hydrogen Cycling – Structure-Function Relationships of Bidirectional [NiFe] Hydrogenases. *FEBS Lett.* **586**, 545-556. <https://doi.org/10.1016/j.febslet.2011.10.010>
10. Mroginski MA, von Stetten D, Kaminski S, Velazquez Escobar F, Michael N, Daminelli-Widany G, Hildebrandt P (2011) Elucidating photoinduced structural changes in phytochromes by the combined application of resonance Raman spectroscopy and theoretical methods. *J. Mol. Struct.* **993**, 15-25. <https://doi.org/10.1016/j.molstruc.2011.02.038>
11. Ly HK, Sezer M, Wisitruangsakul N, Feng JJ, Kranich A, Millo D, Weidinger IM, Zebger I, Murgida DH, Hildebrandt P (2011) Surface enhanced vibrational spectroscopies for probing transient interactions of proteins with biomimetic interfaces: electric field effects on electron transfer and protein dynamics. *FEBS J.* **278**, 1382-1390. <https://doi.org/10.1111/j.1742-4658.2011.08064.x>
12. Hildebrandt, P (2010) A spectral window to the cell. *Angew. Chem. Int. Ed.* **49**, 4540-4541. <https://doi.org/10.1002/anie.201001616>
13. Tintchev F, Wackerbarth H, Kuhlmann U, Toepfl S, Knorr D, Hildebrandt P, Heinz V (2010) Molecular effects of high-pressure processing on food studied by resonance Raman. *Ann. New York Acad. Sci.* **1189**, 34-42. <https://doi.org/10.1111/j.1749-6632.2009.05204.x>
14. Murgida DH, Hildebrandt P (2008) Disentangling interfacial redox processes of proteins by SERR spectroscopy. *Chem. Soc. Rev.* **37**, 937-945. <https://doi.org/10.1039/b705976k>
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19. Hildebrandt P, Kneip C, Matysik J, Nemeth K, Magdo I, Mark F, Schaffner K (1999) Vibrational Analysis of Linear Tetrapyrroles. Implications for Interpreting the Resonance Raman Spectra of Phytochrome. *Rec. Res. Dev. Phys. Chem.* **3**, 63-77.
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Book chapters

- Hildebrandt P (2018) Resonance Raman spectroscopy of protein-cofactor complexes. In *Encyclopedia of Biophysics* (Roberts GCK, Watts A, Eds), sec. Ed.; Springer, Berlin; 131-1. https://doi.org/10.1007/978-3-642-35943-9_131-1.
- Hildebrandt P (2018) Surface enhanced Resonance Raman spectroscopy in electron transfer studies. In *Encyclopedia of Biophysics* (Roberts GCK, Watts A, Eds), sec. Ed.; Springer, Berlin, 132-1. https://doi.org/10.1007/978-3-642-35943-9_132-1.
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- Rodrigues C, Maia R, Ribeirinho M, Hildebrandt P, Gautz L, Prohaska T, Máguas C (2013) Coffee. In: Food protected designation of origin: methodologies and applications – Comprehensive Analytical Chemistry, Vol. 60 (Barcelo D, Ed), Elsevier, New York, 573-598. <https://doi.org/10.1016/B978-0-444-59562-1.00022-0>
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- Feng JJ, Wang AJ, Sezer M, Weidinger IM, Hildebrandt P (2012) Design and construction of multifunctional SERS-active substrates for bioelectronic devices. In: Plasmons: Structure, Properties, and Applications, Turunen AE, Niemie JO (Eds), chapt. 2, Nova Publishers, Hauppauge. E-book; ISBN: 978-1-62100-083-9.
- Hildebrandt P, Feng JJ, Kranich A, Ly HK, Martí M, Martín DF, Murgida DH, Paggi DA, Sezer M, Wisitruangsakul N, Weidinger I, Zebger, I (2010) Electron transfer of proteins at membrane models. In: SERS – Analytical, Biophysical and Life Science Applications” (Schlücker S, Ed), chap. 10, 219 – 240, Wiley-VCH, Weinheim. ISBN: 978-3-527-32567-2
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- Hildebrandt P, Lecomte S (2000) Biochemical Applications of Raman Spectroscopy. In: *Encyclopedia of Spectroscopy and Spectrometry Vol. I*, (Lindon JC, Tranter GE, Holmes JL, Eds), Academic Press, London, 88-97.
- Hildebrandt P (1995) Resonance Raman Spectroscopy of Cytochrome *c*. In: *Cytochrome c. A Multidisciplinary Approach*, (Scott RA, Mauk AG, Eds), University Science, Mill Valley, 285-314. ISBN-13: 978-0935702330
- Hildebrandt P (1992) Resonance Raman Spectroscopy of Cytochrome P-450. In: *Frontiers in Biotransformation*, Vol. 7, (Ruckpaul K, Rein H, Eds), Akademie-Verlag/VCH, Berlin/Weinheim, 166-215. ISBN: 10-3055004566
- Alshuth T, Hildebrandt P, Stockburger M (1984) Structural and Kinetic Studies of Bacteriorhodopsin by Resonance Raman Spectroscopy. In: *Spectroscopy of Biological Molecules*, (Theophanides T, Sandorfy C, Eds) Reidel Publ., Dordrecht, 329-346. ISBN: 978-90-277-1849-5

Refereed articles

- Broser M, Andruniow T, Kraskov A, Palombo R, Katz S, Kloz M, Dostál J, Bernardo C, Kennis J, Hegemann P, Olivucci M, Hildebrandt P (2023) Experimental assessment of the electronic and geometrical structure of a near-infrared absorbing and highly fluorescent microbial rhodopsin. *J. Phys. Chem. Lett.*, accepted. <https://doi.org/10.1021/acs.jpcclett.3c02167>
- Kass D, Larson VA, Corona T, Kuhlmann U, Hildebrandt P, Lohmiller T, Schnegg A, Bill E, Lehnert N, Ray K (2023) Trapping of a phenoxyl radical at a non-heme high-spin iron(II) center. *Nat. Chem.* accepted.
- Blain-Hartung M, von Sass GJ, Plaickner J, Hoang OT, Katz S, Mroginski MA, Esser N, Budisa N, Forest KT, Hildebrandt P (2023) On the Role of a Conserved Tryptophan in the Chromophore Pocket of Cyanobacteriochrome. *J. Mol. Biol.* In press. <https://doi.org/10.1016/j.jmb.2023.168227>
- Davis V, Heidary N, Guet A, Ly KH, Zerball M, Schulz C, Michael N, von Klitzing R, Hildebrandt P, Frielingsdorf S, Lenz O, Zebger I, Fischer A (2023) Immobilization of O₂-tolerant [NiFe] hydrogenase from *Cupriavidus necator* on Tin-rich Indium Oxide Alters the Catalytic Bias from H₂ Oxidation to Proton Reduction. *ACS Catal.* **13**, 6312-6327 <https://doi.org/10.1021/acscatal.2c06334>
- von Sass GJ, Blain-Hartung M, Baumann T, Forest K, Hildebrandt P, Budisa N (2023) The repurposing of archaeal tyrosyl-tRNA synthetase in orthogonal translation with 5-cyanotryptophan as an infrared probe for local structural information, electrostatics, and hydrogen bonding. *Prot. Sci.* **32**:e4705. <https://doi.org/10.1002/pro.4705>

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8. Vladimir Pelmenschikov V, Ferreira D, Venceslau S, Hildebrandt P, Pereira IA, Todorovic S (2023) Substrate-Dependent Conformational Switch of the Noncubane [4Fe-4S] Cluster in Heterodisulfide Reductase HdrB. *J. Am. Chem. Soc.* **145**, 7-11. <https://doi.org/10.1021/jacs.2c10885>
9. Laun K, Katz S, Duffus BR, Oudsen JPH, Karafoulidi-Retsou C, Tadjoung Waffo A, Hildebrandt P, Ly KH, Leimkühler S, Zebger I (2022) Light-driven CO₂ production and its subsequent consumption by a Formate Dehydrogenase. *Chem. Cat. Chem.* **14**, e2022010. <https://doi.org/10.1002/cctc.202201067>
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13. Utesch T, Staffa J, Katz S, Guiyang Y, Kozuch J, Hildebrandt P (2022) Potential distribution across model membranes. *J. Phys. Chem. B.* **126**, 7664–7675. <https://doi.org/10.1021/acs.jpcc.2c05372>
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27. Siebert E, Schmidt A, Frielingsdorf S, Kalms J, Kuhlmann U, Lenz O, Scheerer P, Zebger I, Hildebrandt P (2021) Resonance Raman spectroscopic analysis of the iron-sulfur cluster redox chain of the *Ralstonia eutropha* membrane-bound [NiFe]-hydrogenase. *J. Raman Spectrosc.* **52**, 2621–2632. <https://doi.org/10.1002/jrs.6163>
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29. Kruse F, Nguyen AD, Dragelj J, Heberle J, Hildebrandt P, Mroginski MA, Weidinger IM (2021) A Resonance Raman marker band characterizes the slow and fast form of cytochrome c oxidase. *J. Am. Chem. Soc.* **43**, 2769–2776. <https://doi.org/10.1021/jacs.0c10767>
30. Caserta G, Pelmenshikov V, Lorent C, Waffo AFT, Katz S, Lauterbach L, Schoknecht J, Wang H, Yoda Y, Tamasaku K, Kaupp M, Hildebrandt P, Lenz O, Cramer SP, Zebger I (2021) Hydroxy-bridged Resting States of [NiFe]-Hydrogenase Unraveled by Cryogenic Vibrational Spectroscopy and DFT Computations. *Chem. Sci.* **11**, 5453–5465. <https://doi.org/10.1039/d0sc05022a>
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32. Kass D, Warm K, Cula B, Kuhlmann U, Bill E, Mebs S, Dau H, Haumann M, Hildebrandt P, Ray K (2020) Stoichiometric formation of an oxoiron(IV) complex by a bimolecular soluble methane monooxygenase type activation of O₂ at an iron-cyclam centre. *J. Am. Chem. Soc.* **142**, 5924–5928. <https://doi.org/10.1021/jacs.9b13756>
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