

## Summary of Publications

203 peer reviewed scientific publications since 2002 including 165 journal publications, 20 book chapters, 6 refereed conference proceedings, 5 theses, 7 monographs/books; designed and contributed to 29 journal and book covers. h-index of 39 with +6200 citations, <http://scholar.google.com/citations?user=dKpz7QkAAAAJ>

## Summary of Presentations

144 presentations since 2003 including 80 invited presentations total (conferences, symposia, colloquia) and 5 invited general audience presentations.

## Journal Covers



## Journal Articles

1. M. H. Ali, G. Musabirova, L. Gerhards, I. A. Solov'yov, J. P. Berry, J. Matysik, and A. Alia. Detection of the Carcinogen Benzo[a]pyrene through Photochemically Induced Dynamic Nuclear Polarization: Linking Liquid-State <sup>1</sup>H NMR with Spatially Resolved Imaging. *Analytical Chemistry* **98**, pp. 13598–13608 (2026).
2. P. H. Alvarez, L. Gerhards, I. A. Solov'yov, and P. Hore. Reaction-yield detected magnetic resonance spectroscopy of radical pairs in cryptochrome-4a: a computational study. *Free Radical Biology and Medicine* **251**, pp. 528–538 (2026).
3. L. Gerhards, J. Hungerland, F. Schuhmann, A. Y. Kostritski, V. Bačić, B. Geiger, A. B. Vidal, W. Pezeshkian, F. Ortmann, C. Wiebeler, and I. A. Solov'yov. Multiscale modeling approaches in biomolecular physics. *Advances in Physics: X* **11**, pp. 2660655–(1–30) (2026).
4. J. Xu, E. S. Rasmussen, F. Berthias, J. Schmidt, H. Mouritsen, O. N. Jensen, and I. A. Solov'yov. A Charge-Reversal Point Mutation Completely Depletes Flavin Chromophore from European Robin Cryptochrome 4a Protein. *Journal of Physical Chemistry Letters* **17**, pp. 3742–3748 (2026). Paper selected for a cover.
5. G. Musabirova, O. B. Morozova, A. S. Kiryutin, I. S. Anisimova, I. V. Zhukov, T. Theiss, L. Gerhards, B. G. E. Zoller, T. Gulder, J. Matysik, I. A. Solov'yov, and A. V. Yurkovskaya. Conformational Switching Controls Biradical Spin Dynamics in Flavin-Tryptophan Dyads. *Journal of the American Chemical Society* **148**, pp. 15897–15910 (2026). Paper selected for a cover.
6. G. Grüning, L. Gerhards, C. Sampson, D. R. Kattnig, and I. A. Solov'yov. Spin Relaxation Does Not Preclude Magnetic Field Effects on Lipid Autoxidation. *ACS Central Science* **12**, pp. 49–62 (2026).
7. I. Patmanidis, B. Leberecht, M. Fränzle, D. Lentink, I. A. Solov'yov, and H. Mouritsen. Directionality range in Emlen funnels. *Journal of the Royal Society Interface* **23**, pp. 20250225–(1–12) (2026).
8. A. C. Wickramaratne, E. S. Rasmussen, Y. Chelliah, F. Schuhmann, I. A. Solov'yov, H. Mouritsen, C. B. Green, B. D. Zoltowski, and J. S. Takahashi. Structure of European robin cryptochrome 1 reveals a role in circadian rhythms, not magnetoreception. *iScience* **28**, pp. 114015–(1–11) (2025).
9. J. Luo, J. Hungerland, I. A. Solov'yov, J. E. Subotnik, and S. Hammes-Schiffer. Protein and Solvent Reorganization Drives Radical Pair Stability in Avian Cryptochrome 4a. *Journal of the American Chemical Society* **147**, pp. 43934–43945 (2025).
10. S. A. Chandler, A. S. Gehrckens, L. M. Shah, K. E. Buckton, G. Cao, N. Sen, T. Zollitsch, R. Rodriguez, I. A. Solov'yov, E. Schleicher, S. Weber, P. Hore, C. R. Timmel, S. R. Mackenzie, and J. L. Benesch. Light-induced conformational switching and magnetic sensitivity of *Drosophila* cryptochrome. *Structure* **33**, pp. 1930–1943 (2025).
11. T. Theiss, G. Musabirova, L. Gerhards, I. S. Anisimova, B. G. E. Zoller, T. N. H. Nguyen, D. Denisov, A. Schmidt, S. Panter, S. Weber, C. Tegenkamp, I. A. Solov'yov, J. Matysik, and T. Gulder. Distance-Dependence of Photo-CIDNP in Biomimetic Tryptophan-Flavin Diads. *Angewandte Chemie – International Edition in English* **64**, pp. e202510116 (2025).
12. L. Gerhards, A. Deser, D. R. Kattnig, J. Matysik, and I. A. Solov'yov. Weak Radiofrequency Field Effects on Biological Systems Mediated through the Radical Pair Mechanism. *Chemical Reviews* **125**, pp. 8051–8088 (2025). Paper selected for a cover.
13. P. L. Benjamin, L. Gerhards, I. A. Solov'yov, and P. J. Hore. Magnetosensitivity of Model Flavin-Tryptophan Radical Pairs in a Dynamic Protein Environment. *Journal of Physical Chemistry B* **129**, pp. 5937–5947 (2025).
14. J. M. Kornblueh, and I. A. Solov'yov. Fast-Track Signaling: A Non-Adiabatic Photoactivation Pathway in Plant Cryptochromes. *ACS Central Science* **11**, pp. 1026–1028 (2025).

15. P. Mentzel, L. Gerhards, D. Koppenhöfer, A. Schmiedel, M. Holzapfel, N. N. Lukzen, I. A. Solov'yov, U. E. Steiner, and C. Lambert. Revealing the Impact of g-Tensor Anisotropy on the Charge Recombination in Donor-Acceptor Dyads under High Magnetic Fields. *Journal of the American Chemical Society* **147**, pp. 23068–23078 (2025).
16. M. Majewska, M. Hanić, R. Bartölke, J. Schmidt, J. Božek, L. Gerhards, H. Mouritsen, K.-W. Koch, I. A. Solov'yov, and I. Brand. European Robin Cryptochrome-4a Associates with Lipid Bilayers in an Ordered Manner, Fulfilling a Molecular-Level Condition for Magnetoreception. *ACS Chemical Biology* **20**, pp. 592–606 (2025).
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19. G. J. Pažera, T. P. Fay, I. A. Solov'yov, P. J. Hore, and L. Gerhards. Spin Dynamics of Radical Pairs Using the Stochastic Schrödinger Equation in MolSpin. *Journal of Chemical Theory and Computation* **20**, pp. 8412–8421 (2024).
20. P. H. Alvarez, L. Gerhards, I. A. Solov'yov, and M. C. de Oliveira. Quantum phenomena in biological system. *Frontiers in Quantum Science and Technology* **3**, pp. 1466906–(1–13) (2024).
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27. A. V. Solov'yov, A. V. Verkhovtsev, N. J. Mason, R. A. Amos, I. Bald, G. Baldacchino, B. Dromey, M. Falk, J. Fedor, L. Gerhards, M. Hausmann, G. Hildenbrand, M. Hrabovský, S. Kadlec, J. Kočíšek, F. Lépine, S. Ming, A. Nisbet, K. Ricketts, L. Sala, T. Schlathölter, A. E. H. Wheatley, and I. A. Solov'yov. Condensed Matter Systems Exposed to Radiation: Multiscale Theory, Simulations, and Experiment. *Chemical Reviews* **124**, pp. 8014–8129 (2024). Paper selected for a cover.
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30. F. Schuhmann, J. L. Ramsay, D. R. Kattinig, and I. A. Solov'yov. Structural Rearrangements of Pigeon Cryptochrome 4 Undergoing a Complete Redox Cycle. *Journal of Physical Chemistry B* **128**, pp. 3844–3855 (2024). Paper selected for a cover.
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32. A. Frederiksen, M. Aldag, I. A. Solov'yov, and L. Gerhards. Activation of Cryptochrome 4 from Atlantic Herring. *Biology* **13**, pp. 262–(1–13) (2024).
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35. J. C. Stephani, L. Gerhards, B. Khairalla, I. A. Solov'yov, and I. Brand. How do Antimicrobial Peptides Interact with the Outer Membrane of Gram-Negative Bacteria? Role of Lipopolysaccharides in Peptide Binding, Anchoring, and Penetration. *ACS Infectious Diseases* **10**, pp. 763–778 (2024).
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38. H. H. Vu, H. Behrmann, M. Hanić, G. Jeyasankar, S. Krishnan, D. Dannecker, C. Hammer, M. Gunkel, I. A. Solov'yov, E. Wolf, and E. Behrmann. A marine cryptochrome with an inverse photo-oligomerization mechanism. *Nature Communication* **14**, pp. 6918 (2023).
39. K. M. Salerno, J. Domenico, K. B. Nam Q. Le, R. J. McQuillen, C. D. Stiles, I. A. Solov'yov, and C. F. Martino. Long-Time Oxygen and Superoxide Localization in Arabidopsis thaliana Cryptochrome. *Journal of Chemical Information and Modeling* **63**, pp. 6756–6767 (2023).
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55. I. A. Solov'yov, G. Sushko, I. Friis, and A. V. Solov'yov. Multiscale modeling of stochastic dynamics processes with MBN Explorer. *Journal of Computational Chemistry* **43**, pp. 1442–1458 (2022). Paper selected for a cover.
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## Book Chapters

1. G. B. Sushko, I. A. Solov'yov, and A. V. Solov'yov chap. Multiscale Computational Modelling of MesoBioNano Systems *in: Dynamics of Systems on the Nanoscale* (eds I. A. Solov'yov, A. V. Verkhovtsev, A. V. Korol, and A. V. Solov'yov), pp. 95–136 (Springer, 2022).
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