

Prof. Dr. Fedor Jelezko

List of publications, patents

Patents

1. J.-P. Boudou, P. Curmi; A. Thorel, F. Jelezko, M. Sennour, *Method for manufacturing cubic diamond nanocrystals*, Publication number WO2010102977
2. Daniel. Twitchen, J. Dodson, M. Markham, F. Jelezko *Diamond optical element*, US 20130270991
3. A.Thorel, P. Curmi, J.-P. Boudou, F. Jelezko *Photovoltaic cell including fluorescent diamonds*, WO 2013064784
4. F. Jelezko, I. Shwarz, M. Plenio, A. Retzker, *Method for the hyperpolarisation of nuclear spin in a diamond*, WO2014166883A1

Books

1. F. Jelezko, J. Wrachtrup *Single defect centers in diamond* in *Physics and Applications of CVD Diamond*", Wiley-VCH (2008)
2. F. Jelezko and J. Wrachtrup *Quantum Information Processing with Defects in Quantum Information Processing* , Thomas Beth and Gerd Leuchs (Editors), Wiley-VCH (2006)
3. J. Wrachtrup, T.J. Aartsma, J. Köhler, M. Ketelaars, A.M. van Oijen, M. Matsushita, J. Schmidt, C. Tietz, F. Jelezko *Spectroscopy of Individual Photosynthetic Pigment-Protein Complexes in: Single-Molecule Detection in Solution*, Zander et al.(Editors), Wiley-VCH (2002)
4. F. Jelezko *Single Spins in Diamond: Novel Quantum Devices and Atomic Sensors* in Prati, E., & Shinada, T. *Single-atom nanoelectronics*. Singapore: Pan Stanford Pub. Pte. Lt (2013)
5. P.G. Baranov, H.J. von Bardeleben, F. Jelezko, J. Wrachtrup *Magnetic Resonance of Semiconductors and Their Nanostructures* Springer (2017)

Peer reviewed journals

- (1) Findler C, Lang J, Osterkamp C, Nesladek M & Jelezko F (2020): Indirect overgrowth as a synthesis route for superior diamond nano sensors. *Scientific Reports* volume 10, Article number: 22404
- (2) Osterkamp C, Balasubramanian P, Wolff G, Teraji T, Nesladek M & Jelezko F (2020): Benchmark for Synthesized Diamond Sensors Based on Isotopically Engineered Nitrogen-Vacancy Spin Ensembles for Magnetometry Applications. *Advanced Quantum Technologies* 2000074
- (3) Mindarava Y, Blinder R, Laube C, Knolle W, Abel B, Jentgens C, Isoay J, Scheuer J, Lang J, Schwartz I, Naydenov B & Jelezko F (2020): Efficient conversion of nitrogen to nitrogen-vacancy centers in diamond particles with high-temperature electron irradiation. *Carbon*, Volume 170, 182-190

- (4) Genov G T, Ben-Shalom Y, Jelezko F, Retzker A & Bar-Gill N (2020): Efficient and robust signal sensing by sequences of adiabatic chirped pulses. *PhysRevResearch* 2, 033216
- (5) Mindarava Y, Blinder R, Liu Y, Scheuer J, Lang J, Agafonov V, Davydov V A, Laube C, Knolle W, Abel B, Naydenov B & Jelezko F (2020): Synthesis and coherent properties of ^{13}C -enriched sub-micron diamond particles with nitrogen vacancy color centers. *Carbon*, Volume 65, 395-403
- (6) Lang J, Häußler S, Fuhrmann J, Waltrich R, Laddha S, Scharpf J, Kubanek A, Naydenov B & Jelezko F (2020): Long optical coherence times of shallow-implanted, negatively charged silicon vacancy centers in diamond. *Applied Physics Letters* 116, 064001
- (7) Häußler S, Hartung L, Fehler K G, Antoniuk L, Kulikova L F, Davydov V A, Agafonov V N, Jelezko F & Kubanek A (2019): Preparing single SiV^- center in nanodiamonds for external, optical coupling with access to all degrees of freedom. *New Journal of Physics* 21, 103047
- (8) Lee C W Y, Cheng J, Yiu Y C, Chan K, Lau D, Tang W C, Cheng K W, Kong T, Hui T K C & Jelezko F (2020): Correlation between EPR spectra and coloration of natural diamonds. *Diamond & Related Materials*, Volume 103, 107728
- (9) Genov G T, Aharon N, Jelezko F & Retzker A (2019) Mixed dynamical decoupling. *Quantum Science and Technology*, Volume 4, Number 3
- (10) Metsch M H, Senkalla K, Tratzmiller B, Scheuer J, Kern M, Achard J, Tallaire A, Plenio M B, Siyushev P & Jelezko (2019) Initialization and Readout of Nuclear Spins via a Negatively Charged Silicon-Vacancy Center in Diamond. *Phys. Rev. Lett.* **122**, 190503
- (11) Osterkamp C, Mangold M, Lang J, Balasubramanian P, Teraji T, Naydenov B & Jelezko F (2019) Engineering preferentially-aligned nitrogen-vacancy centre ensembles in CVD grown diamond. *Scientific Reports*, 9:5786
- (12) Siyushev P, Nesladek M, Bourgeois E, Gulka M, Hruby J, Yamamoto T, Trupke M, Teraji T, Isoya J & Jelezko F (2019) Photoelectrical imaging and coherent spin-state readout of single nitrogen-vacancy centers in diamond. *Science* Vol. 363, Issue 6428, pp. 728-731
- (13) Rogers L J, Wang O, Liu Y, Antoniuk L, Osterkamp C, Davydov V A, Agafonov V N, Filipovski A B, Jelezko F & Kubanek A (2019) Single SiV^- centers in low-strain nanodiamonds with bulk-like spectral properties and nano-manipulation capabilities. *Phys. Rev. Applied* 11, 024073
- (14) Rotem A, Gefen T, Oviedo-Casado S, Prior J, Schmitt S, Burak Y, McGuinness L, Jelezko F, & Retzker A (2019) Limits on Spectral Resolution Measurements by Quantum Probes. *Physical Review Letters*, 122(6). doi:ARTN 060503
- (15) Choi J, Zhou H Y, Choi S, Landig R, Ho W W, Isoya J, Jelezko F, Onoda S, Sumiya H, Abanin D A, & Lukin M D (2019) Probing Quantum Thermalization of a Disordered Dipolar Spin Ensemble with Discrete Time-Crystalline Order. *Physical Review Letters*, 122(4). doi:ARTN 043603
- (16) Dietrich A, Bürk M, Steiger E S, Antoniuk L, Tran T T, Nguyen M, Aharonovich I, Jelezko F & Kubanek A (2018) Observation of Fourier transform limited lines in hexagonal boron nitride. *Phys. Rev. B* 98, 081414(R)
- (17) Acin, A., Bloch, I., Buhrman, H., Calarco, T., Eichler, C., Eisert, J., Esteve, D., Gisin, N., Glaser, S. J., Jelezko, F., Kuhr, S., Lewenstein, M., Riedel, M. F., Schmidt, P. O., Thew, R., Wallraff, A., Walmsley, I., & Wilhelm, F. K. (2018) The quantum technologies roadmap: a European community view. *New Journal of Physics*, 20. doi:ARTN 080201

- (18) Brandenburg, F., Nagumo, R., Saichi, K., Tahara, K., Iwasaki, T., Hatano, M., Jelezko, F., Igarashi, R., & Yatsui, T. (2018) Improving the electron spin properties of nitrogen-vacancy centres in nanodiamonds by near-field etching. *Scientific Reports*, 8. doi:ARTN 15847
- (19) Felgen, N., Naydenov, B., Jelezko, F., Reithmaier, J. P., & Popov, C. (2018) Homoepitaxial Diamond Structures with Incorporated SiV Centers. *Physica Status Solidi a-Applications and Materials Science*, 215(22). doi:ARTN 1800371
- (20) Unden T., Tomek N., Weggler T., Frank F., London P., Zopes J., Degen C., Raatz N., Meijer J., Watanabe H., Itoh K. M., Plenio M. B., Naydenov B. & Jelezko F. (2018) Coherent control of solid state nuclear spin nano-ensemble. *npj Quantum Information* 4, Artn 39
- (21) Schwartz I, Scheuer J, Tratzmiller B, Muller S, Chen Q, Dhand I, Wang Z Y, Muller C, Naydenov B, Jelezko F & Plenio M B (2018) Robust optical polarization of nuclear spin baths using Hamiltonian engineering of nitrogen-vacancy center quantum dynamics. *Science Advances*, 4(8). doi:ARTN eaat8978
- (22) Shu Z J, Liu Y, Cao Q Y, Yang P C, Zhang S L, Plenio M B, Jelezko F & Cai J M (2018) Observation of Floquet Raman Transition in a Driven Solid-State Spin System. *Physical Review Letters*, 121(21). doi:ARTN 210501
- (23) Stark A, Aharon N, Huck A, El-Ella H A R, Retzker A, Jelezko F & Andersen U L (2018) Clock transition by continuous dynamical decoupling of a three-level system. *Scientific Reports*, 8. doi:ARTN 14807
- (24) Nguyen C T, Evans R E, Sipahigil A, Bhaskar M K, Sukachev D D, Agafonov V N, Davydov V A, Kulikova L F, Jelezko F & Lukin M D (2018) All-optical nanoscale thermometry with silicon-vacancy centers in diamond. *Applied Physics Letters* 112, Artn 203102
- (25) Xia KY, Jelezko F & Twamley J (2018) Quantum routing of single optical photons with a superconducting flux qubit. *Phys. Rev. A* 97, Artn 052315
- (26) Rong Y Y, Ma J H, Chen L X, Liu Y, Siyushev P, Wu B T, Pan H F, Jelezko F, Wu E & Zeng H P (2018) Excited-state lifetime measurement of silicon vacancy centers in diamond by single-photon frequency upconversion. *Laser Physics* 28, Artn 055401
- (27) Wojciechowski, A. M., Karadas, M., Osterkamp, C., Jankuhn, S., Meijer, J., Jelezko, F., Huck, A., & Andersen, U. L. (2018). Precision temperature sensing in the presence of magnetic field noise and vice-versa using nitrogen-vacancy centers in diamond. *Applied Physics Letters*, 113(1). doi:Artn 013502
- (28) Wojciechowski A. M., Karadas M., Huck A., Osterkamp C., Jankuhn S., Meijer J., Jelezko F. & Andersen U. L. (2018) Contributed Review: Camera-limits for wide-field magnetic resonance imaging with a nitrogen-vacancy spin sensor. *Review of Scientific Instruments* 89, Artn 031501
- (29) Fernandez-Acebal P., Rosolio O., Scher J., Müller C., Müller S., Schmitt S., McGuinness L. P., Schwarz I., Chen Q., Retzker A., Naydenov B., Jelezko F. & Plenio M. B. (2018) Toward Hyperpolarization of Oil Molecules via Single Nitrogen Vacancy Centers in Diamond. *Nano Letters* 18, 1882-1887
- (30) Nizovtsev A. P., Kilin S. Ya, Pushkarchuk A. L., Pushkarchuk V. A., Kuten S. A., Zhikol O. A., Schmitt S., Unden T. & Jelezko F. (2018) Non-flipping ^{13}C spins near an NV center in diamond: hyperfine and spatial characteristics by density functional theory simulation of the $\text{C}_{510}[\text{NV}]\text{H}_{252}$ cluster. *New Journal of Physics* 20, 023022
- (31) Hovav Y, Naydenov B, Jelezko F & Bar-Gill N (2018) Low-Field Nuclear Polarization Using Nitrogen Vacancy Centers in Diamonds. *Phys. Rev. Lett.* 120, 060405

- (32) Marseglia L., Saha K., Ajoy A., Schroder T., Englund D., Jelezko F., Walsworth R., Pacheco J. L., Perry D. L., Bielejec E. S. & Cappellaro P. (2018) Bright nanowire single photon source based on SiV centers in diamond. *Optics Express*, 26, 80-89
- (33) Forneris, J., Tchernij, S. D., Traina, P., Moreva, E., Skukan, N., Jaksic, M., Grilj, V., Bosia, F., Enrico, E., Amato, G., Degiovanni, I. P., Naydenov, B., Jelezko, F., Genovese, M., & Olivero, P. (2018) Mapping the Local Spatial Charge in Defective Diamond by Means of N-V Sensors-A Self-Diagnostic Concept. *Physical Review Applied*, 10(1). doi:ARTN 014024
- (34) Fukuda, R., Balasubramanian, P., Higashimata, I., Koike, G., Okada, T., Kagami, R., Teraji, T., Onoda, S., Haruyama, M., Yamada, K., Inaba, M., Yamano, H., Sturmer, F. M., Schmitt, S., McGuinness, L. P., Jelezko, F., Ohshima, T., Shinada, T., Kawarada, H., Kada, W., Hanaizumi, O., Tanii, T., & Isoya, J. (2018) Lithographically engineered shallow nitrogen-vacancy centers in diamond for external nuclear spin sensing. *New Journal of Physics*, 20. doi:ARTN 083029
- (35) Gefen, T., Khodas, M., McGuinness, L. P., Jelezko, F., & Retzker, A. (2018) Quantum spectroscopy of single spins assisted by a classical clock. *Physical Review A*, 98(1). doi:ARTN 013844
- (36) Haase, J. F., Vetter, P. J., Unden, T., Smirne, A., Roskopf, J., Naydenov, B., Stacey, A., Jelezko, F., Plenio, M. B., & Huelga, S. F. (2018) Controllable Non-Markovianity for a Spin Qubit in Diamond. *Physical Review Letters*, 121(6). doi:ARTN 060401
- (37) Kucsko, G., Choi, S., Choi, J., Maurer, P. C., Zhou, H., Landig, R., Sumiya, H., Onoda, S., Isoya, J., Jelezko, F., Demler, E., Yao, N. Y., & Lukin, M. D. (2018) Critical Thermalization of a Disordered Dipolar Spin System in Diamond. *Physical Review Letters*, 121(2). doi:ARTN 023601
- (38) Malykhin S. A., Ismagilov R. R., Tuyakova F. T., Obratsova E. A., Fedotov P. V., Ermakova A., Siyushev P., Katamadze K. G., Jelezko F., Rakovich Y. P. & Obratsov A. N. (2018) Photoluminescent properties of single crystal diamond microneedles. *Optical Materials* 75, 49-55
- (39) Iwasaki T., Miyamoto Y., Taniguchi T., Siyushev P., Metsch M. H., Jelezko F. & Hatano M. (2017) Tin-Vacancy Quantum Emitters in Diamond. *Phys. Rev. Lett.* 119, 253601
- (40) Frank F., Unden T., Zoller J., Said R. S., Calarco T., Montangero S., Naydenov B. & Jelezko F. (2017) Autonomous calibration of single spin qubit operations. *npj Quantum Information* 3, Article number: 48
- (41) Sukachev D. D., Sipahigil A., Nguyen C. T., Bhaskar M. K., Evans R. E., Jelezko F. & Lukin M. D. (2017) Silicon-Vacancy Spin Qubit in Diamond: A Quantum Memory Exceeding 10 ms with Single-Shot State Readout. *Phys. Rev. Lett.* 119, 223602
- (42) Scheuer J., Schwartz I., Müller S., Chen Q., Dhang I., Plenio M. B., Naydenov B. & Jelezko F. (2017) Robust techniques for polarization and detection of nuclear spin ensembles. *Phys. Rev. B* 96, 174436
- (43) Shu Z. J., Zhang Z. D., Cao Q. Y., Yang P. C., Plenio M. B., Müller C., Lang J., Tomek N., Naydenov B., McGuinness L. P., Jelezko F. & Cai J. M. (2017) Unambiguous nuclear spin detection using an engineered quantum sensing sequence. *Phys. Rev. A* 96, 051402
- (44) Stark A., Aharon N., Unden T., Louzon D., Huck A., Retzker A., Andersen U. L. & Jelezko F. (2017) Narrow-bandwidth sensing of high-frequency fields with continuous dynamical decoupling. *Nature Communications*, DOI: 10.1038/s41467-017-01159-2
- (45) Gefen T., Jelezko F. & Retzker A. (2017) Control methods for improved Fisher information with quantum sensing. *Phys. Rev. A* 96, 032310

- (46) Siyushev P., Metsch M. H., Ijaz A., Binder J. M., Bhaskar M. K., Sukachev D. D., Sipahigil A., Evans R. E., Nguyen C. T., Lukin M. D., Hemmer P. R., Palyanov Y. N., Kupriyanov I. N., Borzdov Y. M., Rogers L. J. & Jelezko F. (2017) Optical and microwave control of germanium-vacancy center spins in diamond. *Physical Review B* 96, 081201(R)
- (47) Häußler S., Thiering G., Dietrich A., Waasem N., Teraji T., Isoya J., Iwasaki T., Hatano M., Jelezko F., Gali A. & Kubanek A. (2017) Photoluminescence excitation spectroscopy of SiV^- and GeV^- color center in diamond. *New Journal of Physics*, Volume 19
- (48) Kern M., Jeske J., Lau D. W. M., Greentree A. D., Jelezko F. & Twamley J. (2017) Optical cryocooling of diamond. *Physical review B*, 95, Artn 235306
- (49) Gulka M., Bourgeois E., Hruby J., Siyushev P., Wachter G., Aumayr F., Hemmer P. R., Gali A., Jelezko F., Trupke M. & Nesladek M. (2017) Pulsed Photoelectric Coherent Manipulation and Detection of N-V Center Spins In Diamond. *Physical Review Applied*, 7, Artn 069901
- (50) Bhaskar M. K., Sukachev D. D., Sipahigil A., Evans R. E., Burek M. J., Nguyen C. T., Rogers L. J., Siyushev P., Metsch M. H., Park H., Jelezko F., Loncar M. & Lukin M. D. (2017) Quantum Nonlinear Optics with a Germanium-Vacancy Color Center in a Nanoscale Diamond Waveguide. *Phys. Rev. Lett.* 118, Artn 223603
- (51) Schmitt S., Gefen T., Stürner F.M., Unden T., Wolff G., Müller C., Scheuer J., Naydenov B., Markham M., Pezzagna S., Meijer J., Schwarz I., Plenio M., Retzker A., McGuinness L.P., Jelezko F. (2017) Submillihertz magnetic spectroscopy performed with a nanoscale. *Science*, Vol 356, Issue 6340, pages 832-837
- (52) Gulka M., Bourgeois E., Hruby J., Siyushev P., Wachter G., Aumayr F., Hemmer P. R., Gali A., Jelezko F., Trupke M. & Nesladek M. (2017) Pulsed Photoelectric Coherent Manipulation and Detection of N-V Center Spins in Diamond. *Physical Review Applied*, 7, Artn 044032
- (53) Binder J. M., Stark A., Tomek N., Scheuer J., Frank F., Jahnke K. D., Müller C., Schmitt S., Metsch M. H., Unden T., Gehring T., Huck A., Andersen U. L., Rogers L. J. & Jelezko F. (2017) Qudi: a modular python suite for experiment control and data processing. *SoftwareX*, Volume 6, 2017, Pages 85–90
- (54) Aharonovich I. & Jelezko F. (2017) SPECTROSCOPY Mapping spins in flatland. *Nature Materials* 16, pages 397-398
- (55) Choi S., Choi J., Landig R., Kucsko G., Zhou H. J., Isoya J., Jelezko F., Onoda S., Sumiya H., Khemani V., von Keyserlingk C., Yao N. Y., Demler E. & Lukin M. D. (2017) Observation of discrete time-crystalline order in a disordered dipolar many-body system. *Nature* 543 pages 221-+
- (56) Choi J., Choi S., Kucsko G., Maurer P. C., Shields B. J., Sumiya H., Onoda S., Isoya J., Demler E., Jelezko F., Yao N. Y. & Lukin M. D. (2017) Depolarization Dynamics in a Strongly Interacting Solid-State Spin Ensemble. *Physical Review Letters* 118, Artnr 093601
- (57) Barson M. S. J., Peddibhotla P., Ovarthaiyapong P., Ganesan K., Taylor R. L., Gebert M., Mielens Z., Koslowski B., Simpson D. A., McGuinness L. P., McCallum J., Prawer S., Onoda S., Ohshima T., Bleszynski Jayich A. C., Jelezko F., Manson N. B. & Doherty M. W. (2017) Nanomechanical Sensing Using Spins in Diamond. *Nano Lett.* DOI: 10.1021/acs.nanolett.6b04544
- (58) Suter D. & Jelezko F. (2017) Single-spin magnetic resonance in the nitrogen-vacancy center of diamond. *PROGRESS IN NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY* 98-99, pages 50-62

- (59) Jeske J., Lau D. W. M., Vidal X., McGuinness L. P., Reineck P., Johnson B. C., Doherty M. W., McCallum J. C., Onoda S., Jelezko F., Ohshima T., Volz T., Cole J. H., Gibson B. C. & Greentree A. D. (2017) Stimulated emission from nitrogen-vacancy centres in diamond. *Nature Communications* 8, Artnr 14000
- (60) Aharon N., Cohen I., Jelezko F. & Retzker A. (2016) Fully robust qubit in atomic and molecular three-level systems. *New Journal of Physics* 18, Artnr 123012
- (61) Radko I.P., Boll M., Israelsen N.M., Raatz N., Meijer J., Jelezko F., Andersen U.L. & Huck A. (2016) Determining the internal quantum efficiency of shallow-implanted nitrogen-vacancy defects in bulk diamond. *Optics Express* 2016,24:27715-27725. 10.1364/Oe.24.027715
- (62) Sipahigil A., Evans R.E., Sukachev D.D., Burek M.J., Borregaard J., Bhaskar M.K., Nguyen C.T., Pacheco J.L., Atikian H.A., Meuwly C., Camacho R.M., Jelezko F., Bielejec E., Park H., Loncar M. & Lukin M.D. (2016) An integrated diamond nanophotonics platform for quantum-optical networks. *Science* 2016,354:847-850. 10.1126/science.aah6875
- (63) Liu W.N., Naydenov B., Chakraborty S., Wuensch B., Hubner K., Ritz S., Colfen H., Barth H., Koynov K., Qi H.Y., Leiter R., Reuter R., Wrachtrup J., Boldt F., Scheuer J., Kaiser U., Sison M., Lasser T., Tinnefeld P., Jelezko F., Walther P., Wu Y.Z. & Weil T. (2016) Fluorescent Nanodiamond-Gold Hybrid Particles for Multimodal Optical and Electron Microscopy Cellular Imaging. *Nano Letters* 2016,16:6236-6244. 10.1021/acs.nanolett.6b02456
- (64) Jantzen U., Kurz A.B., Rudnicki D.S., Schafermeier C., Jahnke K.D., Andersen U.L., Davydov V.A., Agafonov V.N., Kubanek A., Rogers L.J. & Jelezko F. (2016) Nanodiamonds carrying silicon-vacancy quantum emitters with almost lifetime-limited linewidths. *New Journal of Physics* 2016,18. Artn 073036
- (65) Uden T., Balasubramanian P., Louzon D., Vinkler Y., Plenio M.B., Markham M., Twitchen D., Stacey A., Lovchinsky I., Sushkov A.O., Lukin M.D., Retzker A., Naydenov B., McGuinness L.P. & Jelezko F. (2016) Quantum Metrology Enhanced by Repetitive Quantum Error Correction. *Physical Review Letters* 2016,116. Artn 230502
- (66) Wu Y.Z., Jelezko F., Plenio M.B. & Weil T. (2016) Diamond Quantum Devices in Biology. *Angewandte Chemie-International Edition* 2016,55:6586-6598. 10.1002/anie.201506556
- (67) Schleich W.P., Ranade K.S., Anton C., Arndt M., Aspelmeyer M., Bayer M., Berg G., Calarco T., Fuchs H., Giacobino E., Grassl M., Hanggi P., Heckl W.M., Hertel I.V., Huelga S., Jelezko F., Keimer B., Kotthaus J.P., Leuchs G., Lutkenhaus N., Maurer U., Pfau T., Plenio M.B., Raseel E.M., Renn O., Silberhorn C., Schiedmayer J., Schmitt-Landsiedel D., Schonhammer K., Ustinov A., Walther P., Weinfurter H., Welzl E., Wiesendanger R., Wolf S., Zeilinger A. & Zoller P. (2016) Quantum technology: from research to application. *Applied Physics B-Lasers and Optics* 2016,122. Artn 13
- (68) Felgen N., Naydenov B., Turner S., Jelezko F., Reithmaier J.P. & Popov C. (2016) Incorporation and study of SiV centers in diamond nanopillars. *Diamond and Related Materials* 2016,64:64-69. 10.1016/j.diamond.2016.01.011
- (69) de Oliveira F.F., Momenzadeh S.A., Antonov D., Scharpf J., Osterkamp C., Naydenov B., Jelezko F., Denisenko A. & Wrachtrup J. (2016) Toward Optimized Surface delta-Profiles of Nitrogen-Vacancy Centers Activated by Helium Irradiation in Diamond. *Nano Letters* 2016,16:2228-2233. 10.1021/acs.nanolett.5b04511

- (70) Barclay P.E., Fu K.M., Jelezko F. & Loncar M. (2016) Diamond photonics: introduction. *Journal of the Optical Society of America B-Optical Physics* 2016,33:Dp1-Dp1. 10.1364/Josab.33.000dp1
- (71) Rogers L. & Jelezko F. (2016) QUANTUM OPTICS Robust light-controlled qubits. *Nature Photonics* 2016,10:147-148
- (72) Chen Q., Schwarz I., Jelezko F., Retzker A. & Plenio M.B. (2016) Resonance-inclined optical nuclear spin polarization of liquids in diamond structures. *Physical Review B*, 93. Artn 060408
- (73) Lovchinsky I., Sushkov A. O., Urbach E., de Leon N. P., Choi S., De Greve K., Evans R., Gertner R., Bersin E., Müller C., McGuinness L. P., Jelezko F., Walsworth R. L., Park H. & Lukin M. D. (2016) Nuclear magnetic resonance detection and spectroscopy of single proteins using quantum logic. *Science*. DOI: 10.1126/science.aad8022
- (74) Doi Y, Fukui T, Kato H, Makino T, Yamasaki S, Tashima T, Morishita H, Miwa S, Jelezko F, Suzuki Y. & Mizuochi N. (2016) Pure negatively charged state of the NV center in n-type diamond. *Physical Review B* 2016,93. Artn 081203
- (75) Scheuer J., Schwartz I., Chen Q., Schulze-Sünninghausen D., Carl P., Höfer P., Retzker A., Sumiya H., Isoya J., Luy B., Plenio M. B., Naydenov B. & Jelezko F. (2016) Optically induced dynamic nuclear spin polarisation in diamond. *New J. Phys.* 18 013040
- (76) Lehtinen O., Naydenov B., Börner P., Melentjevic K., Müller C., McGuinness L. P., Pezzagna S., Meijer J., Kaiser U. & Jelezko F. (2016) Molecular dynamics simulations of shallow nitrogen and silicon implantation into diamond. *Phys. Rev. B* 93, 035202. DOI:<http://dx.doi.org/10.1103/PhysRevB.93.035202>
- (77) Shershulin V. A., Sedov V. S., Ermakova A., Jantzen U., Rogers L., Huhlina A. A., Teverovskaya E. G., Ralchenko V. G., Jelezko F. & Vlasov I.I. (2015) Size-dependent luminescence of color centers in composite nanodiamonds. *Phys. Status Solidi A* 212, 2600-2605
- (78) Scheuer J., Stark A., Kost M., Plenio M. B., Naydenov B., & Jelezko F. (2015) Accelerated 2D magnetic resonance spectroscopy of single spins using matrix completion. *Scientific reports* 5, 17728, DOI: 10.1038/srep17728
- (79) Nagumo R., Brandenburg F., Ermakova A., Jelezko F. & Yatsui T. (2015) Spectral control of nanodiamond using dressed photon-phonon etching. *Applied Physics A*, 121:1335-1339, DOI 10.1007/s00339-015-9400-0
- (80) Wu Y. Z., Ermakova A., Liu W.N., Pramanik G., Vu T. M., McGuinness L. P., Naydenov B., Hafner S., Reuter R., Wrachtrup J., Isoya J., Förtsch C., Barth H., Simmet T., Jelezko F. & Weil T. (2015) Programmable Biopolymers for Advancing Biomedical Applications of Fluorescent Nanodiamonds. *Adv. Funct. Mater.* 25, 6576-6585
- (81) Teraji T., Yamamoto T., Watanabe K., Koide Y., Isoya J., Onoda S., Ohshima T., Rogers L. J., Jelezko F., Neumann P., (2015) Homoepitaxial diamond film growth: High purity, high crystalline quality, isotopic enrichment, and single color center formation. *Phys. Status solidi A* 212, 2365-2384
- (82) Mkhitarian V. V., Jelezko F. & Dobrovitski V. V. (2015) Highly selective detection of individual nuclear spins with rotary echo on an electron spin probe. *Scientific reports*. 5:15402, DOI:10.1038/srep15402
- (83) Zhang T., Neumann A., Lindlau J., Wu Y., Pramanik G., Naydenov B., Jelezko F., Schüder F., Huber S., Huber M., Stehr F, Högele A., Weil T. & Liedl T. (2015) DNA-Based Self-Assembly of Fluorescent Nanodiamonds. *J. Am. Chem. Soc.* 137, DOI: 10.1021/jacs.5b04857

- (84) Iwasaki T., Ishibashi F., Miyamoto Y., Doi Y., Kobayashi S., Miyazaki T., Tahara K., Jahnke K. D., Rogers L. J., Naydenov B., Jelezko F., Yamasaki S., Nagamachi S., Inubushi T., Mizuochi N. & Hatano M. (2015) Germanium-Vacancy Single Color Centers in Diamond. *Scientific reports*. 5:12882, DOI:10.1038/srep12882
- (85) Kong X., Stark A., Du J., McGuinness L. P. & Jelezko F. (2015) Towards Chemical Structure Resolution with Nanoscale Nuclear Magnetic Resonance Spectroscopy. *Phys. Rev. Applied*. 4:024004, DOI:http://dx.doi.org/10.1103/PhysRevApplied.4.024004
- (86) Liu Y., Chen G., Rong Y., McGuinness L. P., Jelezko F., Tamura S., Tanii T., Teraji T., Onoda S., Ohshima T., Isoya J., Shinada T., Wu E. & Zeng H. (2015) Fluorescence Polarization Switching from a Single Silicon Vacancy Colour Centre in Diamond. *Scientific reports*. 5:12244, DOI:10.1038/srep12244
- (87) Shimo-Oka T., Kato H., Yamasaki S., Jelezko F., Miwa S., Suzuki Y. & Mizuochi N. (2015) Control of coherence among the spins of a single electron and the three nearest neighbor ^{13}C nuclei of a nitrogen-vacancy center in diamond. *Appl. Phys. Lett.* 106, 153103, DOI:10.1063/1.4917539
- (88) Jahnke K. D., Sipahigil A., Binder J. M., Doherty M. W., Metsch M., Rogers L. J., Manson N. B., Lukin M. D. & Jelezko F. (2015) Electron-phonon processes of the silicon-vacancy centre in diamond. *New J. Phys.* 17 043011: DOI:10.1088/1367-2630/17/4/043011
- (89) McGuinness L. P. & Jelezko F. (2015) Look but don't touch the metals. *Science* 347 6226, DOI: 10.1126/science.aaa6908
- (90) Osterkamp C., Lang J., Scharpf J., Müller C., McGuinness L. P., Diemant T., Behm R. J., Naydenov B. & Jelezko F. (2015) Stabilizing shallow color centers in diamond created by nitrogen delta-doping using SF₆ plasma treatment. *Appl. Phys. Lett.* 106 113109: DOI: 10.1063/1.4915305
- (91) Stangenberg R., Wu Y., Hedrich J., Kurzbach D., Wehner D., Weidinger G., Kuan S. L., Jansen M. I., Jelezko F., Luhmann H. J., Hinderberger D., Weil T. & Müllen K. (2015) A Polyphenylene Dendrimer Drug Transporter with Precisely Positioned Amphiphilic Surface Patches. *Advanced Healthcare Materials*, 4, DOI: 10.1002/adhm.201400291
- (92) Romach Y., Müller C., Unden T., Rogers L. J., Isoda T., Ioh K. M., Markham M., Stacey A., Meijer J., Pezzagna S., Naydenov B., McGuinness L. P., Bar-Gill N. & Jelezko F. (2015) Spectroscopy of Surface-Induced Noise Using Shallow Spins in Diamond. *Phys. Rev. Lett.* 114 017601: DOI: http://dx.doi.org/10.1103/PhysRevLett.114.017601
- (93) Chen Q., Schwarz I., Jelezko F., Retzker A. & Plenio M. B. (2015) Optical hyperpolarization of C-13 nuclear spins in nanodiamond ensembles. *Phys. Rev. B* 92, 184420, DOI: 10.1103/PhysRevB.92.184420
- (94) Bourgeois E., Jarmola A., Siyushev P., Gulka M., Hruby J., Jelezko F., Budker D. & Nesladek M. (2015) Photoelectric detection of electron spin resonance of nitrogen-vacancy centres in diamond, *Nat. Commun.* 6, 8577, DOI: 10.1038/ncomms9577
- (95) Rogers L. J., Jahnke K.D., Metsch M. H., Sipahigil A., Binder J. M., Teraji T., Sumiya H., Isoya J., Lukin M. D., Hemmer P. & Jelezko F. (2014) All-Optical Initialization, Readout, and Coherent Preparation of Single Silicon-Vacancy Spins in Diamond. *Phys. Rev. Lett.* 113, 263602
- (96) Häußler A., Heller P., McGuinness L. P., Naydenov B. & Jelezko F. (2014) Optical depth localization of nitrogen-vacancy centers in diamond with nanometer accuracy. *Optics Express*, Vol. 22, Issue 24, pp. 29986-29995: DOI: 10.1364/OE.22.029986

- (97) Dietrich A., Jahnke K. D., Binder J. M., Teraji T., Isoya J., Rogers L. J. & Jelezko F. **(2014)** Isotopically varying spectral features of silicon-vacancy in diamond. *New J. Phys.* **16** 113019: DOI:10.1088/1367-2630/16/11/113019
- (98) Scheuer J., Kong X., Said R. S., Chen J., Kurz A., Marseglia L., Du J., Hemmer P. R., Montangero S., Calarco T., Naydenov B. & Jelezko F. **(2014)** Precise qubit control beyond the rotating wave approximation. *New J. Phys.* **16** 093022: DOI:10.1088/1367-2630/16/9/093022
- (99) Tamura S., Koike G., Komatsubara A., Teraji T., Onoda S., McGuinness L. P., Rogers L., Naydenov B., Wu E., Yan L., Jelezko F., Ohshima T., Isoya J., Shinada T. & Tani T. **(2014)** Array of bright silicon-vacancy centers in diamond fabricated by low-energy focused ion beam implantation. *Appl. Phys. Express* **7**, 115201, DOI: 10.7567/APEX.7.115201
- (100) Sipahigil A., Jahnke K. D., Rogers L. J., Teraji T., Isoya J., Zibrov A. S., Jelezko F. & Lukin M. D. **(2014)** Indistinguishable Photons from Separated Silicon-Vacancy Centers in Diamond. *Phys. Rev. Lett.* **113**, 113602
- (101) Yamamoto, T., Onoda, S., Ohshima, T., Teraji, T., Watanabe, K., Umeda, T., McGuinness, L. P., Müller, C., Naydenov, B., Dolde, F., Fedder, H., Honert, J., Markham, M. L., Twitchen, D., Wrachtrup, J., Jelezko, F. & Isoya, J. **(2014)** Isotopic identification of engineered nitrogen-vacancy spin qubits in ultrapure diamond. *Phys. Rev. B* **90**, 081117
- (102) Rogers, L. J., Jahnke, K. D., Teraji, T., Marseglia, L., Müller, C., Naydenov, B., Schauffert, H., Kranz, C., Isoya, J., McGuinness, L. P. & Jelezko, F. **(2014)** Multiple intrinsically identical single photon emitters in the solid-state. *Nature Communications*: DOI: 10.1038/ncomms5739
- (103) Nizovtsev A. P., Kilin S. Y., Pushkarchuk A. L., Pushkarchuk V. A. & Jelezko F. **(2014)** Theoretical study of hyperfine interactions and optically detected magnetic resonance spectra by simulation of the C-291[NV]H--(172) diamond cluster hosting nitrogen-vacancy center. *New J. Phys.* **16**, 083014, DOI: 10.1088/1367-2630/16/8/083014
- (104) Müller, C., Kong, X., Cai, J.-M., Melentijević, K., Stacey, A., Markham, M., Twitchen, D., Isoya, J., Pezzagna, S., Meijer, J., Du, J. F., Plenio, M. B., Naydenov, B., McGuinness, L. P. & Jelezko, F. **(2014)** Nuclear magnetic resonance spectroscopy with single spin sensitivity. *Nature communications* **5**, Article number 4703: DOI:10.1038/ncomms5703
- (105) London P., Balasubramanian P., Naydenov B., McGuinness L. P. & Jelezko F. **(2014)** Strong driving of a single spin using arbitrarily polarized fields. *Phys. Rev. A* **90**, 012302, DOI: 10.1103/PhysRevA.90.012302
- (106) Rogers, L. J., Jahnke, K. D., Doherty, M. W., Dietrich, A., McGuinness, L. P., Müller, C., Teraji, T., Sumiya, H., Isoya, J., Manson, N. B. & Jelezko, F. **(2014)** Electronic structure of the negatively charged silicon-vacancy center in diamond. *Phys. Rev. B* **89**, 235101: DOI: 10.1103/PhysRevB.89.235101
- (107) Dolde, F., Bergholm, V., Wang, Y., Jakobi, I., Naydenov, B., Pezzagna, S., Meijer, J., Jelezko, F., Neumann, P., Schulte-Herbrüggen, T., Biamonte, J. & Wrachtrup, J. **(2014)** High-fidelity spin entanglement using optimal control. *Nature Communications* **5**: DOI: 10.1038/ncomms4371
- (108) Vlasov, I.I., Shiryayev, A.A., Rendler, T., Steinert, S., Lee, S.-Y., Antonov, D., Voros, M., Jelezko, F., Fisenko, A.V., Semjonova, L.F., Biskupek, J., Kaiser, U., Lebedev, O.I., Sildos, I., Hemmer, P.R., Konov, V.I., Gali, A. & Wrachtrup, J. **(2014)** Molecular-sized fluorescent nanodiamonds. *Nature Nanotechnology* **9**, 54-58: DOI: 10.1038/nnano.2013.255
- (109) Dolde, F., Doherty, M. W., Michl, J., Jakobi, I., Naydenov, B., Pezzagna, S., Meijer, J., Neumann, P., Jelezko, F., Manson, N. B. & Wrachtrup, J. **(2014)** Nanoscale Detection of a

Single Fundamental Charge in Ambient Conditions Using the NV⁻ Center in Diamond. *Phys. Rev. Lett.* 112

- (110) Cai J., Jelezko F. & Plenio M. B. (2014) Hybrid sensors based on colour centres in diamond and piezoactive layers. *Nat. Commun.* 5, 4065, DOI: 10.1038/ncomms5065
- (111) Albrecht A., Koplovitz G., Retzker A., Jelezko F., Yochelis S., Porath D., Nevo Y., Shoseyov O., Paltiel Y. & Plenio M. B. (2014) Self-assembling hybrid diamond-biological quantum devices. *New J. Phys.* 16, 093002, DOI: 10.1088/1367-2630/16/9/093002
- (112) Antonov, D., Häußermann, T., Aird, A., Roth, J., Trebin, H.-R., Müller, C., McGuinness, L., Jelezko, F., Yamamoto, T., Isoya, J., Pezzagna, S., Meijer, J. & Wrachtrup, J. (2014) Statistical investigations on nitrogen-vacancy center creation. *Appl. Phys. Lett.* 104, 012105: dx.doi.org/10.1063/1.4860997
- (113) Jelezko F. (2013) Nanodiamonds sense iron in blood. *Trac-Trend AnalChem* 52, VII-VIII
- (114) Albrecht, A., Retzker, A., Jelezko, F. & Plenio, M.B. (2013) Coupling of nitrogen vacancy centres in nanodiamonds by means of phonons. *New Journal of Physics* 15: DOI: 10.1088/1367-2630/15/8/083014
- (115) Aslam, N., Waldherr, G., Neumann, P., Jelezko, F. & Wrachtrup, J. (2013) Photo-induced ionization dynamics of the nitrogen vacancy defect in diamond investigated by single-shot charge state detection. *New Journal of Physics* 15 : DOI: 10.1088/1367-2630/15/1/013064
- (116) Boudou, J.-P., Tisler, J., Reuter, R., Thorel, A., Curmi, P.A., Jelezko, F. & Wrachtrup, J. (2013) Fluorescent nanodiamonds derived from HPHT with a size of less than 10 nm. *Diamond and Related Materials* 37: 80–86. DOI: 10.1016/j.diamond.2013.05.006
- (117) Cai, J., Jelezko, F., Plenio, M.B. & Retzker, A. (2013) Diamond-based single-molecule magnetic resonance spectroscopy. *New Journal of Physics* 15 : DOI: 10.1088/1367-2630/15/1/013020
- (118) Cai, J., Retzker, A., Jelezko, F. & Plenio, M.B. (2013) A large-scale quantum simulator on a diamond surface at room temperature. *Nature Physics* 9: 168–173. DOI: doi:10.1038/nphys2519
- (119) Doherty, M.W., Manson, N.B., Delaney, P., Jelezko, F., Wrachtrup, J. & Hollenberg, L.C.L. (2013) The nitrogen-vacancy colour centre in diamond. *Physics Reports-Review Section of Physics Letters* 528: 1–45. DOI: 10.1016/j.physrep.2013.02.001
- (120) Dolde, F., Jakobi, I., Naydenov, B., Zhao, N., Pezzagna, S., Trautmann, C., Meijer, J., Neumann, P., Jelezko, F. & Wrachtrup, J. (2013) Room-temperature entanglement between single defect spins in diamond. *Nature Physics* 9: 139–143. DOI: 10.1038/nphys2545
- (121) Ermakova, A., Pramanik, G., Cai, J.-M., Algara-Siller, G., Kaiser, U., Weil, T., Tzeng, Y.-K., Chang, H.C., McGuinness, L.P., Plenio, M.B., Naydenov, B. & Jelezko, F. (2013) Detection of a Few Metallo-Protein Molecules Using Color Centers in Nanodiamonds. *Nano Letters* 13: 3305–3309. DOI: 10.1021/nl4015233
- (122) London, P., Scheuer, J., Cai, J.-M., Schwarz, I., Retzker, A., Plenio, M.B., Katagiri, M., Teraji, T., Koizumi, S., Isoya, J., Fischer, R., McGuinness, L.P., Naydenov, B. & Jelezko, F. (2013) Detecting and Polarizing Nuclear Spins with Double Resonance on a Single Electron Spin. *Physical Review Letters* 111 : DOI: 10.1103/PhysRevLett.111.067601
- (123) McGuinness, L.P., Hall, L.T., Stacey, A., Simpson, D.A., Hill, C.D., Cole, J.H., Ganesan, K., Gibson, B.C., Praver, S., Mulvaney, P., Jelezko, F., Wrachtrup, J., Scholten, R.E. & Hollenberg, L.C.L. (2013) Ambient nanoscale sensing with single spins using quantum decoherence. *New Journal of Physics* 15 : DOI: 10.1088/1367-2630/15/7/073042
- (124) Niemeyer, I., Shim, J.H., Zhang, J., Suter, D., Taniguchi, T., Teraji, T., Abe, H., Onoda, S., Yamamoto, T., Ohshima, T., Isoya, J. & Jelezko, F. (2013) Broadband excitation by chirped

- pulses: application to single electron spins in diamond. *New Journal of Physics* 15 : DOI: 10.1088/1367-2630/15/3/033027
- (125) Osterkamp, C., Scharpf, J., Pezzagna, S., Meijer, J., Diemant, T., Behm, R.J., Naydenov, B. & Jelezko, F. (2013) Increasing the creation yield of shallow single defects in diamond by surface plasma treatment. *Applied Physics Letters* 103: 193118. DOI: 10.1063/1.4829875
- (126) Nizovtsev A. P., Kilin S. Y., Pushkarchuk A. L., Pushkarchuk V. A. & Jelezko F. (2013) HYPERFINE INTERACTIONS IN THE CARBON CLUSTER C291H172NV HOSTING NV CENTER. *Reviews and Short Notes* 154-157
- (127) Shi, F., Zhang, Q., Naydenov, B., Jelezko, F., Du, J., Reinhard, F. & Wrachtrup, J. (2013) Quantum logic readout and cooling of a single dark electron spin. *Physical Review B* 87 : DOI: 10.1103/PhysRevB.87.195414
- (128) Siyushev, P., Pinto, H., Voeroes, M., Gali, A., Jelezko, F. & Wrachtrup, J. (2013) Optically Controlled Switching of the Charge State of a Single Nitrogen-Vacancy Center in Diamond at Cryogenic Temperatures. *Physical Review Letters* 110 : DOI: 10.1103/PhysRevLett.110.167402
- (129) Wrachtrup, J., Jelezko, F., Grotz, B. & McGuinness, L. (2013) Nitrogen-vacancy centers close to surfaces. *Mrs Bulletin* 38: 149–154. DOI: 10.1557/mrs.2013.22
- (130) Yamamoto, T., Umeda, T., Watanabe, K., Onoda, S., Markham, M.L., Twitchen, D.J., Naydenov, B., McGuinness, L.P., Teraji, T., Koizumi, S., Dolde, F., Fedder, H., Honert, J., Wrachtrup, J., Ohshima, T., Jelezko, F. & Isoya, J. (2013) Extending spin coherence times of diamond qubits by high-temperature annealing. *Physical Review B* 88 : DOI: 10.1103/PhysRevB.88.075206
- (131) Yamamoto, T., Muller, C., McGuinness, L.P., Teraji, T., Naydenov, B., Onoda, S., Ohshima, T., Wrachtrup, J., Jelezko, F. & Isoya, J. (2013) Strongly coupled diamond spin qubits by molecular nitrogen implantation. *Physical Review B* 88 : DOI: 10.1103/PhysRevB.88.201201
- (132) Beha, K., Fedder, H., Wolfer, M., Becker, M.C., Siyushev, P., Jamali, M., Batalov, A., Hinz, C., Hees, J., Kirste, L., Obloh, H., Gheeraert, E., Naydenov, B., Jakobi, I., Dolde, F., Pezzagna, S., Twittchen, D., Markham, M., Dregely, D., Giessen, H., Meijer, J., Jelezko, F., Nebel, C.E., Bratschitsch, R., Leitenstorfer, A. & Wrachtrup, J. (2012) Diamond nanophotonics. *Beilstein Journal of Nanotechnology* 3: 895–908. DOI: 10.3762/bjnano.3.100
- (133) Cai, J., Jelezko, F., Katz, N., Retzker, A. & Plenio, M.B. (2012) Long-lived driven solid-state quantum memory. *New Journal of Physics* 14 : DOI: 10.1088/1367-2630/14/9/093030
- (134) Cai, J.-M., Naydenov, B., Pfeiffer, R., McGuinness, L.P., Jahnke, K.D., Jelezko, F., Plenio, M.B. & Retzker, A. (2012) Robust dynamical decoupling with concatenated continuous driving. *New Journal of Physics* 14 : DOI: 10.1088/1367-2630/14/11/113023
- (135) Doherty, M.W., Dolde, F., Fedder, H., Jelezko, F., Wrachtrup, J., Manson, N.B. & Hollenberg, L.C.L. (2012) Theory of the ground-state spin of the NV- center in diamond. *Physical Review B* 85 : DOI: 10.1103/PhysRevB.85.205203
- (136) Grotz, B., Hauf, M.V., Dankerl, M., Naydenov, B., Pezzagna, S., Meijer, J., Jelezko, F., Wrachtrup, J., Stutzmann, M., Reinhard, F. & Garrido, J.A. (2012) Charge state manipulation of qubits in diamond. *Nature Communications* 3 : DOI: 10.1038/ncomms1729
- (137) Hall, L.T., Beart, G.C.G., Thomas, E.A., Simpson, D.A., McGuinness, L.P., Cole, J.H., Manton, J.H., Scholten, R.E., Jelezko, F., Wrachtrup, J., Petrou, S. & Hollenberg, L.C.L.

- (2012) High spatial and temporal resolution wide-field imaging of neuron activity using quantum NV-diamond. *Scientific Reports* 2 : DOI: 10.1038/srep00401
- (138) Jahnke, K.D., Naydenov, B., Teraji, T., Koizumi, S., Umeda, T., Isoya, J. & Jelezko, F. (2012) Long coherence time of spin qubits in C-12 enriched polycrystalline chemical vapor deposition diamond. *Applied Physics Letters* 101 : DOI: 10.1063/1.4731778
- (139) Jelezko, F. & Wrachtrup, J. (2012) Focus on diamond-based photonics and spintronics. *New Journal of Physics* 14 : DOI: 10.1088/1367-2630/14/10/105024
- (140) Mizuochi, N., Makino, T., Kato, H., Takeuchi, D., Ogura, M., Okushi, H., Nothaft, M., Neumann, P., Gali, A., Jelezko, F., Wrachtrup, J. & Yamasaki, S. (2012) Electrically driven single-photon source at room temperature in diamond. *Nature Photonics* 6 : 299–303. DOI: 10.1038/NPHOTON.2012.75
- (141) Nothaft, M., Hoehla, S., Jelezko, F., Fruehauf, N., Pflaum, J. & Wrachtrup, J. 2012a. Electrically driven photon antibunching from a single molecule at room temperature. *Nature Communications* 3 : DOI: 10.1038/ncomms1637
- (142) Nothaft, M., Hoehla, S., Jelezko, F., Pflaum, J. & Wrachtrup, J. (2012) Single molecule electrical excitation. *Physica Status Solidi B-Basic Solid State Physics* 249: 653–660. DOI: 10.1002/pssb.201100778
- (143) Nothaft, M., Hoehla, S., Jelezko, F., Pflaum, J. & Wrachtrup, J. (2012) The role of oxygen-induced processes on the emission characteristics of single molecule emitters. *Physica Status Solidi B-Basic Solid State Physics* 249: 661–665. DOI: 10.1002/pssb.201100794
- (144) Taminiau, T.H., Wagenaar, J.J.T., Van der Sar, T., Jelezko, F., Dobrovitski, V.V. & Hanson, R. (2012) Detection and Control of Individual Nuclear Spins Using a Weakly Coupled Electron Spin. *Physical Review Letters* 109 : DOI: 10.1103/PhysRevLett.109.137602
- (145) Waldherr, G., Beck, J., Neumann, P., Said, R.S., Nitsche, M., Markham, M.L., Twitchen, D.J., Twamley, J., Jelezko, F. & Wrachtrup, J. (2012) High-dynamic-range magnetometry with a single nuclear spin in diamond. *Nature Nanotechnology* 7: 105–108. DOI: 10.1038/NNANO.2011.224
- (146) Waldherr, Gerald, Dada, A.C., Neumann, P., Jelezko, F., Andersson, E. & Wrachtrup, J. (2012) Distinguishing between Nonorthogonal Quantum States of a Single Nuclear Spin. *Physical Review Letters* 109 : DOI: 10.1103/PhysRevLett.109.180501
- (147) Zhao, N., Honert, J., Schmid, B., Klas, M., Isoya, J., Markham, M., Twitchen, D., Jelezko, F., Liu, R.-B., Fedder, H. & Wrachtrup, J. (2012) Sensing single remote nuclear spins. *Nature Nanotechnology* 7: 657–662. DOI: 10.1038/NNANO.2012.152
- (148) Bayn, I., Meyler, B., Lahav, A., Salzman, J., Kalish, R., Fairchild, B.A., Praver, S., Barth, M., Benson, O., Wolf, T., Siyushev, P., Jelezko, F. & Wrachtrup, J. (2011) Processing of photonic crystal nanocavity for quantum information in diamond. *Diamond and Related Materials* 20: 937–943. DOI: 10.1016/j.diamond.2011.05.002
- (149) Beha, K., Batalov, A., Harms, H., Hinz, C., Thomay, T., Jelezko, F., Wrachtrup, J., Leitenstorfer, A. & Bratschitsch, R. (2011) Photon antibunching from diamond nitrogen-vacancy centers inside a dielectric micropillar cavity. In New York: Ieee.
- (150) Bermudez, A., Jelezko, F., Plenio, M.B. & Retzker, A. (2011) Electron-Mediated Nuclear-Spin Interactions between Distant Nitrogen-Vacancy Centers. *Physical Review Letters* 107 : DOI: 10.1103/PhysRevLett.107.150503
- (151) Chi, Y., Chen, G., Jelezko, F., Wu, E. & Zeng, H. (2011) Enhanced Photoluminescence of Single-Photon Emitters in Nanodiamonds on a Gold Film. *Ieee Photonics Technology Letters* 23: 374–376. DOI: 10.1109/LPT.2011.2106488

- (152) Dolde, F., Fedder, H., Doherty, M.W., Noebauer, T., Rempp, F., Balasubramanian, G., Wolf, T., Reinhard, F., Hollenberg, L.C.L., Jelezko, F. & Wrachtrup, J. (2011) Electric-field sensing using single diamond spins. *Nature Physics* 7: 459–463. DOI: 10.1038/NPHYS1969
- (153) Fedder, H., Dolde, F., Rempp, F., Wolf, T., Hemmer, P., Jelezko, F. & Wrachtrup, J. (2011) Towards T(1)-limited magnetic resonance imaging using Rabi beats. *Applied Physics B-Lasers and Optics* 102: 497–502. DOI: 10.1007/s00340-011-4408-4
- (154) Grotz, B., Beck, J., Neumann, P., Naydenov, B., Reuter, R., Reinhard, F., Jelezko, F., Wrachtrup, J., Schweinfurth, D., Sarkar, B. & Hemmer, P. (2011) Sensing external spins with nitrogen-vacancy diamond. *New Journal of Physics* 13 : DOI: 10.1088/1367-2630/13/5/055004
- (155) Hauf, M.V., Grotz, B., Naydenov, B., Dankerl, M., Pezzagna, S., Meijer, J., Jelezko, F., Wrachtrup, J., Stutzmann, M., Reinhard, F. & Garrido, J.A. (2011) Chemical control of the charge state of nitrogen-vacancy centers in diamond. *Physical Review B* 83 : DOI: 10.1103/PhysRevB.83.081304
- (156) Markham, M.L., Dodson, J.M., Scarsbrook, G.A., Twitchen, D.J., Balasubramanian, G., Jelezko, F. & Wrachtrup, J. (2011) CVD diamond for spintronics. *Diamond and Related Materials* 20: 134–139. DOI: 10.1016/j.diamond.2010.11.016
- (157) Marseglia, L., Hadden, J.P., Stanley-Clarke, A.C., Harrison, J.P., Patton, B., Ho, Y.-L.D., Naydenov, B., Jelezko, F., Meijer, J., Dolan, P.R., Smith, J.M., Rarity, J.G. & O'Brien, J.L. (2011) Nanofabricated solid immersion lenses registered to single emitters in diamond. *Applied Physics Letters* 98 : DOI: 10.1063/1.3573870
- (158) Mueller, T., Aharonovich, I., Lombez, L., Alaverdyan, Y., Vamivakas, A.N., Castelletto, S., Jelezko, F., Wrachtrup, J., Prawer, S. & Atatuere, M. (2011) Wide-range electrical tunability of single-photon emission from chromium-based colour centres in diamond. *New Journal of Physics* 13 : DOI: 10.1088/1367-2630/13/7/075001
- (159) Naydenov, B., Dolde, F., Hall, L.T., Shin, C., Fedder, H., Hollenberg, L.C.L., Jelezko, F. & Wrachtrup, J. (2011) Dynamical decoupling of a single-electron spin at room temperature. *Physical Review B* 83 : DOI: 10.1103/PhysRevB.83.081201
- (160) Nothaft, M., Hoehla, S., Nicolet, A., Jelezko, F., Fruehauf, N., Pflaum, J. & Wrachtrup, J. (2011) Optical Sensing of Current Dynamics in Organic Light-Emitting Devices at the Nanometer Scale. *Chemphyschem* 12: 2590–2595. DOI: 10.1002/cphc.201100442
- (161) Pezzagna, S., Rogalla, D., Becker, H.-W., Jakobi, I., Dolde, F., Naydenov, B., Wrachtrup, J., Jelezko, F., Trautmann, C. & Meijer, J. (2011) Creation of colour centres in diamond by collimated ion-implantation through nano-channels in mica. *Physica Status Solidi a-Applications and Materials Science* 208: 2017–2022. DOI: 10.1002/pssa.201100455
- (162) Shenderova, O.A., Vlasov, I.I., Turner, S., Van Tendeloo, G., Orlinskii, S.B., Shiryaev, A.A., Khomich, A.A., Sulyanov, S.N., Jelezko, F. & Wrachtrup, J. (2011) Nitrogen Control in Nanodiamond Produced by Detonation Shock-Wave-Assisted Synthesis. *Journal of Physical Chemistry C* 115: 14014–14024. DOI: 10.1021/jp202057q
- (163) Tisler, J., Reuter, R., Laemmle, A., Jelezko, F., Balasubramanian, G., Hemmer, P.R., Reinhard, F. & Wrachtrup, J. (2011) Highly Efficient FRET from a Single Nitrogen-Vacancy Center in Nanodiamonds to a Single Organic Molecule. *Acs Nano* 5 : 7893–7898. DOI: 10.1021/nn2021259
- (164) Waldherr, G., Beck, J., Steiner, M., Neumann, P., Gali, A., Frauenheim, T., Jelezko, F. & Wrachtrup, J. (2011) Dark States of Single Nitrogen-Vacancy Centers in Diamond Unraveled by Single Shot NMR. *Physical Review Letters* 106 : DOI: 10.1103/PhysRevLett.106.157601

- (165) Waldherr, G., Neumann, P., Huelga, S.F., Jelezko, F. & Wrachtrup, J. **(2011a)** Violation of a Temporal Bell Inequality for Single Spins in a Diamond Defect Center. *Physical Review Letters* 107 : DOI: 10.1103/PhysRevLett.107.090401
- (166) Waldherr, G., Neumann, P., Huelga, S.F., Jelezko, F. & Wrachtrup, J. **(2011b)** Violation of a Temporal Bell Inequality for Single Spins in a Diamond Defect Center (vol 107, 090401, 2011). *Physical Review Letters* 107: 129901. DOI: 10.1103/PhysRevLett.107.129901
- (167) Kubo, Y., Ong, F.R., Bertet, P., Vion, D., Jacques, V., Zheng, D., Dreau, A., Roch, J.-F., Auffeves, A., Jelezko, F., Wrachtrup, J., Barthe, M.F., Bergonzo, P. & Esteve, D. **(2010)** Strong Coupling of a Spin Ensemble to a Superconducting Resonator. *Physical Review Letters* 105: 140502. DOI: 10.1103/PhysRevLett.105.140502
- (168) Ladd, T.D., Jelezko, F., Laflamme, R., Nakamura, Y., Monroe, C. & O'Brien, J.L. **(2010)** Quantum computers. *Nature* 464: 45–53. DOI: 10.1038/nature08812
- (169) Naydenov, B., Reinhard, F., Laemmle, A., Richter, V., Kalish, R., D'Haenens-Johansson, U.F.S., Newton, M., Jelezko, F. & Wrachtrup, J. **(2010)** Increasing the coherence time of single electron spins in diamond by high temperature annealing. *Applied Physics Letters* 97: 242511. DOI: 10.1063/1.3527975
- (170) Marseglia L., Harrison J. P., Hadden J. P., Young A., Jelezko F., Naydenov B., Meijer J., Stanley-Clarke A. C., Ho Y. L. D., O'Brien & Rarity J. G. **(2010)** Photonic crystal defect cavities coupled to N-V centres in diamond. 36th European Conference and Exhibition on Optical Communication (ECOC), Vols 1 and 2
- (171) Naydenov, B., Richter, V., Beck, J., Steiner, M., Neumann, P., Balasubramanian, G., Achard, J., Jelezko, F., Wrachtrup, J. & Kalish, R. **(2010)** Enhanced generation of single optically active spins in diamond by ion implantation. *Applied Physics Letters* 96: 163108. DOI: 10.1063/1.3409221
- (172) Neumann, Philipp, Beck, J., Steiner, M., Rempp, F., Fedder, H., Hemmer, P.R., Wrachtrup, J. & Jelezko, F. **(2010)** Single-Shot Readout of a Single Nuclear Spin. *Science* 329: 542–544. DOI: 10.1126/science.1189075
- (173) Neumann, P., Kolesov, R., Naydenov, B., Beck, J., Rempp, F., Steiner, M., Jacques, V., Balasubramanian, G., Markham, M.L., Twitchen, D.J., Pezzagna, S., Meijer, J., Twamley, J., Jelezko, F. & Wrachtrup, J. **(2010)** Quantum register based on coupled electron spins in a room-temperature solid. *Nature Physics* 6: 249–253. DOI: 10.1038/NPHYS1536
- (174) Nizovtsev, A.P., Kilin, S.Y., Neumann, P., Jelezko, F. & Wrachtrup, J. **(2010)** Quantum registers based on single NV + n C-13 centers in diamond: II. Spin characteristics of registers and spectra of optically detected magnetic resonance. *Optics and Spectroscopy* 108: 239–246. DOI: 10.1134/S0030400X1002013X
- (175) Orwa, J.O., Aharonovich, I., Jelezko, F., Balasubramanian, G., Balog, P., Markham, M., Twitchen, D.J., Greentree, A.D. & Prawer, S. **(2010)** Nickel related optical centres in diamond created by ion implantation. *Journal of Applied Physics* 107: 093512. DOI: 10.1063/1.3357374
- (176) Pezzagna, S., Naydenov, B., Jelezko, F., Wrachtrup, J. & Meijer, J. **(2010)** Creation efficiency of nitrogen-vacancy centres in diamond. *New Journal of Physics* 12: 065017. DOI: 10.1088/1367-2630/12/6/065017
- (177) Pezzagna, Sebastien, Wildanger, D., Mazarov, P., Wieck, A.D., Sarov, Y., Rangeow, I., Naydenov, B., Jelezko, F., Hell, S.W. & Meijer, J. **(2010)** Nanoscale Engineering and Optical Addressing of Single Spins in Diamond. *Small* 6: 2117–2121. DOI: 10.1002/sml.201000902
- (178) Shin, C., Kim, C., Kolesov, R., Balasubramanian, G., Jelezko, F., Wrachtrup, J. & Hemmer, P.R. **(2010)** Sub-optical resolution of single spins using magnetic resonance imaging at

- room temperature in diamond. *Journal of Luminescence* 130: 1635–1645. DOI: 10.1016/j.jlumin.2009.12.006
- (179) Simon, C., Afzelius, M., Appel, J., de la Giroday, A.B., Dewhurst, S.J., Gisin, N., Hu, C.Y., Jelezko, F., Kroll, S., Muller, J.H., Nunn, J., Polzik, E.S., Rarity, J.G., De Riedmatten, H., Rosenfeld, W., Shields, A.J., Skoeld, N., Stevenson, R.M., Thew, R., Walmsley, I.A., Weber, M.C., Weinfurter, H., Wrachtrup, J. & Young, R.J. (2010) Quantum memories. *European Physical Journal D* 58: 1–22. DOI: 10.1140/epjd/e2010-00103-y
- (180) Siyushev, P., Kaiser, F., Jacques, V., Gerhardt, I., Bischof, S., Fedder, H., Dodson, J., Markham, M., Twitchen, D., Jelezko, F. & Wrachtrup, J. (2010) Monolithic diamond optics for single photon detection. *Applied Physics Letters* 97: 241902. DOI: 10.1063/1.3519849
- (181) Steiner, M., Neumann, P., Beck, J., Jelezko, F. & Wrachtrup, J. (2010) Universal enhancement of the optical readout fidelity of single electron spins at nitrogen-vacancy centers in diamond. *Physical Review B* 81: 035205. DOI: 10.1103/PhysRevB.81.035205
- (182) Steinert, S., Dolde, F., Neumann, P., Aird, A., Naydenov, B., Balasubramanian, G., Jelezko, F. & Wrachtrup, J. (2010) High sensitivity magnetic imaging using an array of spins in diamond. *Review of Scientific Instruments* 81: 043705. DOI: 10.1063/1.3385689
- (183) Balasubramanian, G., Neumann, P., Twitchen, D., Markham, M., Kolesov, R., Mizuochi, N., Isoya, J., Achard, J., Beck, J., Tissler, J., Jacques, V., Hemmer, P.R., Jelezko, F. & Wrachtrup, J. (2009) Ultralong spin coherence time in isotopically engineered diamond. *Nature Materials* 8 : 383–387. DOI: 10.1038/NMAT2420
- (184) Batalov, A., Jacques, V., Kaiser, F., Siyushev, P., Neumann, P., Rogers, L.J., McMurtrie, R.L., Manson, N.B., Jelezko, F. & Wrachtrup, J. (2009) Low Temperature Studies of the Excited-State Structure of Negatively Charged Nitrogen-Vacancy Color Centers in Diamond. *Physical Review Letters* 102: 195506. DOI: 10.1103/PhysRevLett.102.195506
- (185) Boudou, J.-P., Curmi, P.A., Jelezko, F., Wrachtrup, J., Aubert, P., Sennour, M., Balasubramanian, G., Reuter, R., Thorel, A. & Gaffet, E. 2009a. High yield fabrication of fluorescent nanodiamonds. *Nanotechnology* 20: 235602. DOI: 10.1088/0957-4484/20/23/235602
- (186) Boudou, J.-P., Curmi, P.A., Jelezko, F., Wrachtrup, J., Aubert, P., Sennour, M., Balasubramanian, G., Reuter, R., Thorel, A. & Gaffet, E. 2009b. High yield fabrication of fluorescent nanodiamonds (vol 20, 235602, 2009). *Nanotechnology* 20: 359801. DOI: 10.1088/0957-4484/20/35/359801
- (187) Han, K.Y., Willig, K.I., Rittweger, E., Jelezko, F., Eggeling, C. & Hell, S.W. (2009) Three-Dimensional Stimulated Emission Depletion Microscopy of Nitrogen-Vacancy Centers in Diamond Using Continuous-Wave Light. *Nano Letters* 9: 3323–3329. DOI: 10.1021/nl901597v
- (188) Jacques, V., Neumann, P., Beck, J., Markham, M., Twitchen, D., Meijer, J., Kaiser, F., Balasubramanian, G., Jelezko, F. & Wrachtrup, J. (2009) Dynamic Polarization of Single Nuclear Spins by Optical Pumping of Nitrogen-Vacancy Color Centers in Diamond at Room Temperature. *Physical Review Letters* 102: 057403. DOI: 10.1103/PhysRevLett.102.057403
- (189) Borsch M., Reuter R., Balasubramanian G., Erdmann R., Jelezko F. & Wrachtrup J. (2009) Fluorescent nanodiamonds for FRET-based monitoring of a single biological nanomotor F0F1-ATP synthase. *Multiphoton Microscopy in the Biomedical Sciences IX*, 7183, DOI: 10.1117/12.812720
- (190) Kolesov, R., Grotz, B., Balasubramanian, G., Stoehr, R.J., Nicolet, A.A.L., Hemmer, P.R., Jelezko, F. & Wrachtrup, J. (2009) Wave-particle duality of single surface plasmon polaritons. *Nature Physics* 5: 470–474. DOI: 10.1038/NPHYS1278

- (191) Lai, N.D., Zheng, D., Jelezko, F., Treussart, F. & Roch, J.-F. (2009) Influence of a static magnetic field on the photoluminescence of an ensemble of nitrogen-vacancy color centers in a diamond single-crystal. *Applied Physics Letters* 95: 133101. DOI: 10.1063/1.3238467
- (192) Mizuochi, N., Neumann, P., Rempp, F., Beck, J., Jacques, V., Siyushev, P., Nakamura, K., Twitchen, D.J., Watanabe, H., Yamasaki, S., Jelezko, F. & Wrachtrup, J. (2009) Coherence of single spins coupled to a nuclear spin bath of varying density. *Physical Review B* 80: 041201. DOI: 10.1103/PhysRevB.80.041201
- (193) Naydenov, B., Kolesov, R., Batalov, A., Meijer, J., Pezzagna, S., Rogalla, D., Jelezko, F. & Wrachtrup, J. (2009) Engineering single photon emitters by ion implantation in diamond. *Applied Physics Letters* 95: 181109. DOI: 10.1063/1.3257976
- (194) Neumann, P., Kolesov, R., Jacques, V., Beck, J., Tisler, J., Batalov, A., Rogers, L., Manson, N.B., Balasubramanian, G., Jelezko, F. & Wrachtrup, J. (2009) Excited-state spectroscopy of single NV defects in diamond using optically detected magnetic resonance. *New Journal of Physics* 11: 013017. DOI: 10.1088/1367-2630/11/1/013017
- (195) Neumann, P., Mizuochi, N., Rempp, F., Hemmer, P., Watanabe, H., Yamasaki, S., Jacques, V., Gaebel, T., Jelezko, F. & Wrachtrup, J. (2009) Response to Comment on “Multipartite Entanglement Among Single Spins in Diamond.” *Science* 323: 1169–1169. DOI: 10.1126/science.1168459
- (196) Siyushev, P., Jacques, V., Aharonovich, I., Kaiser, F., Mueller, T., Lombez, L., Atatuere, M., Castelletto, S., Prawer, S., Jelezko, F. & Wrachtrup, J. (2009) Low-temperature optical characterization of a near-infrared single-photon emitter in nanodiamonds. *New Journal of Physics* 11: 113029. DOI: 10.1088/1367-2630/11/11/113029
- (197) Tisler, J., Balasubramanian, G., Naydenov, B., Kolesov, R., Grotz, B., Reuter, R., Boudou, J.-P., Curmi, P.A., Sennour, M., Thorel, A., Boersch, M., Aulenbacher, K., Erdmann, R., Hemmer, P.R., Jelezko, F. & Wrachtrup, J. (2009) Fluorescence and Spin Properties of Defects in Single Digit Nanodiamonds. *Acs Nano* 3: 1959–1965. DOI: 10.1021/nn9003617
- (198) Balasubramanian, G., Chan, I.Y., Kolesov, R., Al-Hmoud, M., Tisler, J., Shin, C., Kim, C., Wojcik, A., Hemmer, P.R., Krueger, A., Hanke, T., Leitenstorfer, A., Bratschitsch, R., Jelezko, F. & Wrachtrup, J. (2008) Nanoscale imaging magnetometry with diamond spins under ambient conditions. *Nature* 45 : 648–U46. DOI: 10.1038/nature07278
- (199) Batalov, A., Zierl, C., Gaebel, T., Neumann, P., Chan, I.-Y., Balasubramanian, G., Hemmer, P.R., Jelezko, F. & Wrachtrup, J. (2008) Temporal coherence of photons emitted by single nitrogen-vacancy defect centers in diamond using optical Rabi-oscillations. *Physical Review Letters* 100: 077401. DOI: 10.1103/PhysRevLett.100.077401
- (200) Meijer, J., Pezzagna, S., Vogel, T., Burchard, B., Bukow, H.H., Rangelow, I.W., Sarov, Y., Wiggers, H., Pluemel, I., Jelezko, F., Wrachtrup, J., Schmidt-Kaler, F., Schnitzler, W. & Singer, K. (2008) Towards the implanting of ions and positioning of nanoparticles with nm spatial resolution. *Applied Physics a-Materials Science & Processing* 91: 567–571. DOI: 10.1007/s00339-008-4515-1
- (201) Kilin S., Mikhalychev A., Nizovtsev A., Kuten S. Jelezko F. & Wrachtrup J. (2008) Entanglement Detection of GHZ States of Electronic and Two Nuclear Spins in NV Center in Diamond. Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference, Vols 1-9, 3433-3434
- (202) Neumann, P., Mizuochi, N., Rempp, F., Hemmer, P., Watanabe, H., Yamasaki, S., Jacques, V., Gaebel, T., Jelezko, F. & Wrachtrup, J. (2008) Multipartite entanglement among single spins in diamond. *Science* 320: 1326–1329. DOI: 10.1126/science.1157233
- (203) Tamarat, P., Manson, N.B., Harrison, J.P., McMurtrie, R.L., Nizovtsev, A., Santori, C., Beausoleil, R.G., Neumann, P., Gaebel, T., Jelezko, F., Hemmer, P. & Wrachtrup, J. (2008)

- Spin-flip and spin-conserving optical transitions of the nitrogen-vacancy centre in diamond. *New Journal of Physics* 10: 045004. DOI: 10.1088/1367-2630/10/4/045004
- (204) Brecht, M., Studier, H., Elli, A.F., Jelezko, F. & Bittl, R. (2007) Assignment of red antenna states in photosystem I from *Thermosynechococcus elongatus* by single-molecule spectroscopy. *Biochemistry* 46: 799–806. DOI: 10.1021/bi061975k
- (205) Santori C., Tamarat P., Neumann P., Wrachtrup J., Fattal D., Beausoleil R. G., Rabeau J., Olivero P., Greentree A. D., Praver S., Jelezko F. & Hemmer P. (2007) Optical manipulation of single spins in diamond - art. no. 648207. *Advanced Optical and Quantum Memories and Computing IV* 6482, 48207-48207
- (206) Dutt, M.V.G., Childress, L., Jiang, L., Togan, E., Maze, J., Jelezko, F., Zibrov, A.S., Hemmer, P.R. & Lukin, M.D. (2007) Quantum register based on individual electronic and nuclear spin qubits in diamond. *Science* 316: 1312–1316. DOI: 10.1126/science.1139831
- (207) Neugart, F., Zappe, A., Jelezko, F., Tietz, C., Boudou, J.P., Krueger, A. & Wrachtrup, J. (2007) Dynamics of diamond nanoparticles in solution and cells. *Nano Letters* 7: 3588–3591. DOI: 10.1021/nl0716303
- (208) Rabeau, J.R., Stacey, A., Rabeau, A., Praver, S., Jelezko, F., Mirza, I. & Wrachtrup, J. (2007) Single nitrogen vacancy centers in chemical vapor deposited diamond nanocrystals. *Nano Letters* 7: 3433–3437. DOI: 10.1021/nl0719271
- (209) Kilin S., Nitsovstev A., Roch J. F., Treussart F., Wrachtrup J. & Jelezko F. (2007) DIAMOND-BASED QUANTUM INFORMATION TECHNOLOGIES AT A NANOSCALE LEVEL. *Physics, Chemistry and Application of Nanostructures: Reviews and Short Notes*, 3-13, DOI: 10.1142/9789812770950_0001
- (210) Hemmer P., Wrachtrup J., Jelezko F., Tamarat P., Praver S. & Lukin M. (2007) Scalable quantum computing in diamond - art. no. 648206, *Advanced Optical and Quantum Memories and Computing IV* 6482, 48206-48206, DOI: 10.1117/12.7168388
- (211) Childress, L., Dutt, M.V.G., Taylor, J.M., Zibrov, A.S., Jelezko, F., Wrachtrup, J., Hemmer, P.R. & Lukin, M.D. (2006) Coherent dynamics of coupled electron and nuclear spin qubits in diamond. *Science* 314: 281–285. DOI: 10.1126/science.1131871
- (212) Elli, A.F., Jelezko, F., Tietz, C., Studier, H., Brecht, M., Bittl, R. & Wrachtrup, J. (2006) Red pool chlorophylls of photosystem I of the cyanobacterium *Thermosynechococcus elongatus*: A single-molecule study. *Biochemistry* 45: 1454–1458. DOI: 10.1021/bi0521700
- (213) Gaebel, T., Domhan, M., Popa, I., Wittmann, C., Neumann, P., Jelezko, F., Rabeau, J.R., Stavrias, N., Greentree, A.D., Praver, S., Meijer, J., Twamley, J., Hemmer, P.R. & Wrachtrup, J. (2006) Room-temperature coherent coupling of single spins in diamond. *Nature Physics* 2: 408–413. DOI: 10.1038/nphys318
- (214) Gaebel, T., Domhan, M., Wittmann, C., Popa, I., Jelezko, F., Rabeau, J., Greentree, A., Praver, S., Trajkov, E., Hemmer, P.R. & Wrachtrup, J. (2006) Photochromism in single nitrogen-vacancy defect in diamond. *Applied Physics B-Lasers and Optics* 82: 243–246. DOI: 10.1007/s00340-005-2056-2
- (215) Howard, M., Twamley, J., Wittmann, C., Gaebel, T., Jelezko, F. & Wrachtrup, J. (2006) Quantum process tomography and Linblad estimation of a solid-state qubit. *New Journal of Physics* 8: 33. DOI: 10.1088/1367-2630/8/3/033
- (216) Jelezko, F. & Wrachtrup, J. (2006) Single defect centres in diamond: A review. *Physica Status Solidi a-Applications and Materials Science* 203: 3207–3225. DOI: 10.1002/pssa.200671403
- (217) Meijer, J., Vogel, T., Burchard, B., Rangelow, I.W., Bischoff, L., Wrachtrup, J., Domhan, M., Jelezko, F., Schnitzler, W., Schulz, S.A., Singer, K. & Schmidt-Kaler, F. (2006)

- Concept of deterministic single ion doping with sub-nm spatial resolution. *Applied Physics a-Materials Science & Processing* 83: 321–327. DOI: 10.1007/s00339-006-3497-0
- (218) Popa, J., Gaebel, T., Neumann, P., Jelezko, F. & Wrachtrup, J. (2006) Spin polarization in single spin experiments on defects in diamond. *Israel Journal of Chemistry* 46: 393–398.
- (219) Rabeau, J.R., Reichart, P., Tamanyan, G., Jamieson, D.N., Praver, S., Jelezko, F., Gaebel, T., Popa, I., Domhan, M. & Wrachtrup, J. (2006) Implantation of labelled single nitrogen vacancy centers in diamond using N-15. *Applied Physics Letters* 88: 023113. DOI: 10.1063/1.2158700
- (220) Santori, C., Tamarat, P., Neumann, P., Wrachtrup, J., Fattal, D., Beausoleil, R.G., Rabeau, J., Olivero, P., Greentree, A.D., Praver, S., Jelezko, F. & Hemmer, P. (2006) Coherent population trapping of single spins in diamond under optical excitation. *Physical Review Letters* 97: 247401. DOI: 10.1103/PhysRevLett.97.247401
- (221) Tamarat, P., Gaebel, T., Rabeau, J.R., Khan, M., Greentree, A.D., Wilson, H., Hollenberg, L.C.L., Praver, S., Hemmer, P., Jelezko, F. & Wrachtrup, J. (2006) Stark shift control of single optical centers in diamond. *Physical Review Letters* 97: 083002. DOI: 10.1103/PhysRevLett.97.083002
- (222) Wrachtrup, J. & Jelezko, F. (2006) Processing quantum information in diamond. *Journal of Physics-Condensed Matter* 18: S807–S824. DOI: 10.1088/0953-8984/18/21/S08
- (223) Hemmer P., Praver S., Trajkov E., Wrachtrup J., Jelezko F., Manson N. & Sellars M. (2006) VLSI quantum computer in diamond - art. no. 61300E, *Advanced Optical and Quantum Memories and Computing III* 6130, E1300-E1300, DOI: 10.1117/12.660186
- (224) Dutt M. V. G., Childress L., Togan E., Taylor J. M., Jiang L., Zibrov A. S., Hemmer P. R., Jelezko F., Wrachtrup J. & Lukin M. D. (2006) Quantum control of electron and nuclear spin qubits in the solid-state, *Atomic Physics* 20 869, 119-127
- (225) Beausoleil R. G., Fattal D., Fiorentino M., Santori C. M., Snider G., Spillane S. M., Williams R. S., Munro W. J., Spiller T. P., Rabeau J. R., Praver S., Jelezko F., Tamarat P., Wrachtrup J. & Hemmer P. (2006) Applications of nanophotonics to classical and quantum information technology - art. no. 639301, *Nanophotonics for Communication-Materials, Devices, and Systems III* 6393, 39301-39301, DOI: 10.1117/12.692241
- (226) Trajkov E., Jelezko F., Wrachtrup J., Praver S. & Hemmer P. (2005) Quantum computing with nitrogen-vacancy pairs in diamond, *Fluctuations and Noise in Photonics and Quantum Optics III* 5846, 272-276, DOI: 10.1117/12.611143
- (227) Meijer, J., Burchard, B., Domhan, M., Wittmann, C., Gaebel, T., Popa, I., Jelezko, F. & Wrachtrup, J. (2005) Generation of single color centers by focused nitrogen implantation. *Applied Physics Letters* 87: 261909. DOI: 10.1063/1.2103389
- (228) Nizovtsev, A.P., Kilin, S.Y., Jelezko, F., Gaebel, T., Popa, I., Gruber, A. & Wrachtrup, J. (2005) A quantum computer based on NV centers in diamond: Optically detected nutations of single electron and nuclear spins. *Optics and Spectroscopy* 99: 233–244. DOI: 10.1134/1.2034610
- (229) Jelezko F. & Wrachtrup J. (2005) Quantum Information Processing with Defects, *QUANTUM INFORMATION PROCESSING* 150-161
- (230) Rabeau, J.R., Chin, Y.L., Praver, S., Jelezko, F., Gaebel, T. & Wrachtrup, J. (2005) Fabrication of single nickel-nitrogen defects in diamond by chemical vapor deposition. *Applied Physics Letters* 86: 131926. DOI: 10.1063/1.1896088
- (231) Gaebel, T., Popa, I., Gruber, A., Domhan, M., Jelezko, F. & Wrachtrup, J. (2004) Stable single-photon source in the near infrared. *New Journal of Physics* 6: 98. DOI: 10.1088/1367-2630/6/1/098

- (232) Jelezko, F., Gaebel, T., Popa, I., Gruber, A. & Wrachtrup, J. (2004) Observation of coherent oscillations in a single electron spin. *Physical Review Letters* 92: 076401. DOI: 10.1103/PhysRevLett.92.076401
- (233) Jelezko, F., Gaebel, T., Popa, I., Domhan, M., Gruber, A. & Wrachtrup, J. (2004) Observation of coherent oscillation of a single nuclear spin and realization of a two-qubit conditional quantum gate. *Physical Review Letters* 93: 130501. DOI: 10.1103/PhysRevLett.93.130501
- (234) Jelezko, F. & Wrachtrup, J. (2004) Read-out of single spins by optical spectroscopy. *Journal of Physics-Condensed Matter* 16: R1089–R1104. DOI: 10.1088/0953-8984/16/30/R03
- (235) Popa, I., Gaebel, T., Domhan, M., Wittmann, C., Jelezko, F. & Wrachtrup, J. (2004) Energy levels and decoherence properties of single electron and nuclear spins in a defect center in diamond. *Physical Review B* 70: 201203. DOI: 10.1103/PhysRevB.70.201203
- (236) Volkmer, A., Jelezko, F., Popa, I., Rebane, K. & Wrachtrup, J. (2004) First-order quantum correlation among photons from a single molecule. *Abstracts of Papers of the American Chemical Society* 228: U269–U269.
- (237) Volkmer A., Jelezko F., Gerken U., Schuler S. & Wrachtrup J. (2003) Non-classical photon statistics in the fluorescence from single light-harvesting complexes, *Biophys. J.* 84, 490a-490a
- (238) Gerken, U., Jelezko, F., Gotze, B., Branschadel, M., Tietz, C., Ghosh, R. & Wrachtrup, J. (2003) Membrane environment reduces the accessible conformational space available to an integral membrane protein. *Journal of Physical Chemistry B* 107: 338–343. DOI: 10.1021/jp025903o
- (239) Jelezko, F., Volkmer, A., Popa, I., Rebane, K.K. & Wrachtrup, J. (2003) Coherence length of photons from a single quantum system. *Physical Review A* 67: 041802. DOI: 10.1103/PhysRevA.67.041802
- (240) Nizovtsev, A.P., Kilin, S.Y., Jelezko, F., Popa, I., Gruber, A., Tietz, C. & Wrachtrup, J. (2003) Spin-selective low temperature spectroscopy on single molecules with a triplet-triplet optical transition: Application to the NV defect center in diamond. *Optics and Spectroscopy* 94: 848–858. DOI: 10.1134/1.1586735
- (241) Nizovtsev, A.P., Kilin, S.Y., Jelezko, F., Popa, I., Gruber, A. & Wrachtrup, J. (2003) NV centers in diamond: spin-selective photokinetics, optical ground-state spin alignment and hole burning. *Physica B-Condensed Matter* 340: 106–110. DOI: 10.1016/j.physb.2003.09.014
- (242) Volkmer, A., Jelezko, F., Gerken, U., Schuler, S. & Wrachtrup, J. (2003) Non-classical photon statistics in the fluorescence from single light-harvesting complexes. *Biophysical Journal* 84: 490A–490A.
- (243) Gerken, U., Wolf-Klein, H., Huschenbett, C., Gotze, B., Schuler, S., Jelezko, F., Tietz, C., Wrachtrup, J. & Paulsen, H. (2002) Single molecule spectroscopy of oriented recombinant trimeric light harvesting complexes of higher plants. *Single Molecules* 3: 183–188. DOI: 10.1002/1438-5171(200208)3:4<183::AID-SIMO183>3.0.CO;2-8
- (244) Wrachtrup J., Tietz C., Jelezko F., Gerken U., Schuler S., Gotze B. & Volkmer A. (2002) Supramolecular assemblies in photosynthesis, STRUCTURAL AND ELECTRONIC PROPERTIES OF MOLECULAR NANOSTRUCTURES 633, 470-475
- (245) Jelezko, F., Popa, I., Gruber, A., Tietz, C., Wrachtrup, J., Nizovtsev, A. & Kilin, S. (2002) Single spin states in a defect center resolved by optical spectroscopy. *Applied Physics Letters* 81 : 2160–2162. DOI: 10.1063/1.1507838

- (246) Tietz, C., Jelezko, F., Gerken, U., Gotze, B., Ghosh, R. & Wrachtrup, J. (2002) The membrane environment stabilizes the ring like structure of antenna complexes of purple bacteria; A single molecule study. *Biophysical Journal* 82 : 198A–198A.
- (247) Jelezko, F., Tietz, C., Gerken, U., Thews, E., Schuler, S., Wechsler, A. & Wrachtrup, J. (2001) Single molecule spectroscopy on photosynthetic pigment-protein complexes. *Optics and Spectroscopy* 91: 457–460. DOI: 10.1134/1.1405228
- (248) Jelezko, F., Tietz, C., Gruber, A., Popa, I., Nizovtsev, A., Kilin, S. & Wrachtrup, J. (2001) Spectroscopy of single N-V centers in diamond. *Single Molecules* 2: 255–260. DOI: 10.1002/1438-5171(200112)2:4<255::AID-SIMO255>3.3.CO;2-4
- (249) Nizovtsev, A.P., Kilin, S.Y., Tietz, C., Jelezko, F. & Wrachtrup, J. (2001) Modeling fluorescence of single nitrogen-vacancy defect centers in diamond. *Physica B-Condensed Matter* 308: 608–611. DOI: 10.1016/S0921-4526(01)00757-8
- (250) Tietz, C., Jelezko, F., Gerken, U., Schuler, S., Schubert, A., Rogl, H. & Wrachtrup, J. (2001) Single molecule spectroscopy on the light-harvesting complex II of higher plants. *Biophysical Journal* 81: 556–562.
- (251) Wrachtrup, J., Jelezko, F. & Tietz, C. (2001) Observation of charge and energy transfer in single photosynthetic reaction centers. *Abstracts of Papers of the American Chemical Society* 221: U287–U287.
- (252) Jelezko, F., Tietz, C., Gerken, U., Wrachtrup, J. & Bittl, R. (2000) Single-molecule spectroscopy on photosystem I pigment-protein complexes. *Journal of Physical Chemistry B* 104: 8093–8096. DOI: 10.1021/jp001332t
- (253) Wrachtrup, J., Jelezko, F., Tietz, C., Gerken, U., Schubert, A. & Rogl, H. (2000) Energy transfer and protein dynamics of single light harvesting complexes. *Biophysical Journal* 78: 384A–384A.
- (254) Kilin S. Y., Nizovtsev A. P., Maevskaya T. M., Drabenstedt A., Tietz C. Schuster J., Jelezko F. & Wrachtrup J. (2000) Spectroscopy on single tunneling N-V defect centres in diamond, Saratov Fall Meeting '99: Laser Physics and Spectroscopy 4002, 206-216
- (255) Drabenstedt, A., Fleury, L., Tietz, C., Jelezko, F., Kilin, S., Nizovtzev, A. & Wrachtrup, J. (1999) Low-temperature microscopy and spectroscopy on single defect centers in diamond. *Physical Review B* 60: 11503–11508. DOI: 10.1103/PhysRevB.60.11503
- (256) Drabenstedt, A., Tietz, C., Jelezko, F., Wrachtrup, J., Kilin, S. & Nizovtzev, A. (1999) Fluorescence correlation and low temperature linewidth of single defect centers in diamond. *Acta Physica Polonica A* 96: 665–675.
- (257) Tamarat, P., Jelezko, F., Brunel, C., Maali, A., Lounis, B. & Orrit, M. (1999) Non-linear optical response of single molecules. *Chemical Physics* 245: 121–132. DOI: 10.1016/S0301-0104(99)00024-5
- (258) Jelezko, F., Lounis, B. & Orrit, M. (1998) Non-linear optical measurements on single molecules in solids at low temperatures. *Optical Materials* 9: 381–385. DOI: 10.1016/S0925-3467(97)00060-8
- (259) Lounis, B., Jelezko, F. & Orrit, M. (1998) Non-linear optical spectroscopy of single molecules in solids at low temperatures. *Journal of Luminescence* 76-7: 274–278. DOI: 10.1016/S0022-2313(97)00153-1
- (260) Walla, P.J., Jelezko, F., Tamarat, P., Lounis, B. & Orrit, M. (1998) Perylene in biphenyl and anthracene crystals: an example of the influence of the host on single-molecule signals. *Chemical Physics* 233: 117–125. DOI: 10.1016/S0301-0104(98)00159-1
- (261) Jelezko, F., Lounis, B. & Orrit, M. (1997) New host-guest systems for single molecule spectroscopy. *Abstracts of Papers of the American Chemical Society* 213: 6–PHYS.

- (262) Jelezko, F., Lounis, B. & Orrit, M. (1997) Pump-probe spectroscopy and photophysical properties of single di-benzanthanthrene molecules in a naphthalene crystal. *Journal of Chemical Physics* 107: 1692–1702. DOI: 10.1063/1.474525
- (263) Lounis, B., Jelezko, F. & Orrit, M. (1997) Single molecules driven by strong resonant fields: Hyper-Raman and subharmonic resonances. *Physical Review Letters* 78: 3673–3676. DOI: 10.1103/PhysRevLett.78.3673
- (264) Boiron, A.M., Jelezko, F., Durand, Y., Lounis, B. & Orrit, M. (1996) Dibenzanthanthrene in n-hexadecane, dibenzoterrylene in naphthalene: Two new systems for single molecule spectroscopy. *Molecular Crystals and Liquid Crystals Science and Technology Section A-Molecular Crystals and Liquid Crystals* 291: 41–44. DOI: 10.1080/10587259608042728
- (265) Jelezko, F., Tamarat, P., Lounis, B. & Orrit, M. (1996) Dibenzoterrylene in naphthalene: A new crystalline system for single molecule spectroscopy in the near infrared. *Journal of Physical Chemistry* 100: 13892–13894. DOI: 10.1021/jp960845q