

Publications Featuring Data from the 900 MHz Ultra Wide Bore Magnet

The 900 MHz was first ramped up in July 2004 and commissioned a year later. The user operation since that time has resulted in 100 publications listed below (November 19, 2018).

2018

1. Abad, N., Rosenberg, J.T., Roussel, T., Grice, D.C., Harrington, M.G. and Grant, S.C. "Metabolic Assessment of a Migraine Model Using Relaxation-Enhanced 1H Spectroscopy at Ultrahigh Field" [Magn Reson Med](#) 79 (3), 1266-1275 (2018).
2. Abad, N.; Rosenberg, J.T.; Hike, D.C.; Harrington, M.G.; Grant, S.C., "Dynamic Sodium Imaging at Ultra-High Field Reveals Progression in a Preclinical Migraine Model" [Pain](#) 159 (10), 2058-2065 (2018).
3. Ahlschwede, K.M.; Curran, G.L.; Rosenberg, J.T.; Grant, S.C.; Sarkar, G.; Jenkins, R.B.; Ramakrishnan, S.; Poduslo, J.F.; Kandimalla, K.K., "Cationic carrier peptide enhances cerebrovascular targeting of nanoparticles in Alzheimer's disease brain" [Nanomedicine](#) 1876, 1-38 (2018).
4. Chien, P.H.; Feng, X.; Tang, M.; Rosenberg, J.T.; O'Neill, S.; Zheng, J.; Grant, S.C.; Hu, Y.Y., "Li Distribution Heterogeneity in Solid Electrolyte $Li_{10}GeP_2S_{12}$ upon Electrochemical Cycling Probed by 7Li MRI" *J Physical Chemistry Letters* 9(8), 1990-1998 (2018).
5. Roussel, T.; Rosenberg, J.T.; Grant, S.C.; Frydman, L., "Brain investigations of rodent disease models by chemical exchange saturation transfer at 21.1 T" [NMR in Biomedicine](#), 31 (11), e3995 (2018).
6. Waiczies, S.; Rosenberg, J.T.; Kuehne, A.; Starke, L.; Delgado, P.R.; Millward, J.M.; Prinz, C.; Periquito, J.S.; Pohlmann, A.; Waiczies, H.; Niendorf, T., "Fluorine-19 MRI at 21.1 T: enhanced spin-lattice relaxation of perfluoro-15-crown-5-ether and sensitivity as demonstrated in ex vivo murine neuro-inflammation" [MAGMA](#) 31 (5), 13 (2018).

7. Sellappan, P.; Cote, J.; Kreth, P.A.; Schepkin, V.D.; Darkazalli, A.; Morris, D.R.; Alvi, F.S.; Levenson, C.W., "Variability and uncertainty in the rodent controlled cortical impact model of traumatic brain injury" [Journal of Neuroscience Methods](#) (2018).
8. A. Nowogrodzki, A., "The Strongest Scanners" [Nature](#), 563, 24 - 26 (2018).
9. Budinger, F.B.; Bird, M.D. "MRI and MRS of the human brain at magnetic fields of 14 T to 20 T: Technical feasibility, safety, and neuroscience horizons" [NeuroImage](#) 168: 509-531 (2018)

2017

1. Rosenberg, J.T.; Shemesh, N.; Muniz, J.A.; Dumez, J.N.; Frydman, L. and Grant, S.C. "Transverse relaxation of selectively excited metabolites in stroke at 21.1 T". [Magn Reson Med](#) 77:2 520-528 (2017).
2. Neubauer, A.; Nies, C.; Schepkin, V.D.; Hu, R.; Malzacher, M.; Chacon-Caldera, J.; Thiele, D.; Gottwald, E. and Schad, L.R. "Tracking protein function with sodium multi quantum spectroscopy in a 3D-tissue culture based on micro-cavity arrays" [Scientific Reports](#) 7:3943 1-9 (2017).
3. Murray, D.T., Kato, M., Lin, Y.; Thurber, K.R., Hung, I., McKnight, S.L. and Tycko, R. "Structure of FUS Protein Fibrils and Its Relevance to Self-Assembly and Phase Separation of Low-Complexity Domains" [Cell](#), 171:3, 615-627 (2017).
4. Jeon, J., Qiao, X., Hung, I., Mitra, A.K., Desfosses, A., Huang, D., Gor'kov, P.L., Craven, R.C., Kingston, R.L., Gan, Z., Zhu, F. and Chen, B. "Structural Model of the Tubular Assembly of the Rous Sarcoma Virus Capsid Protein" [J Am Chem Soc](#) 139:5, 2006-2013 (2017).
5. Shemesh, N.; Rosenberg, J.T.; Dumez, J-N.; Grant, S.C. and Frydman, L. "Distinguishing neuronal from astrocytic subcellular microstructures using in vivo Double Diffusion Encoded 1H MRS at 21.1 T" [PLoS ONE](#), 12:10, 1-19 (2017).
6. Schepkin, V.D.; Neubauer, A.; Nagel, A.M. and Budinger, T.F. "Comparison of potassium and sodium binding in vivo and in agarose samples using TQTPPI pulse sequence" [J Magn Reson](#) 277, 162-168 (2017).
7. Affram, K.; Udofot, O.; Singh, M.; Krishnan, S.; Reams,R.; Rosenberg, J.T. and Agyare, E. "Smart thermosensitive liposomes for effective solid tumor therapy and in

vivo imaging" [PLoS ONE](#), 12:9, 22 (2017).

8. Koroloff, S.N. and Nevzorov, A.A. "Selective excitation for spectral editing and assignment in separated local field experiments of oriented membrane proteins" [J Magn Reson](#) 274: 7-12 (2017).
9. Theint, T.; Nadaud, P.S.; Aucoin, D.; Helmus, J.J.; Pondaven, S.P.; Surewicz, K.; Surewicz, W.K. and Jaroniec, C.P. "Species-dependent structural polymorphism of Y145Stop prion protein amyloid revealed by solid-state NMR spectroscopy" [Nat Commun](#) 8: 753 (2017).
10. Hung, I.; Wu, G. and Gan, Z. "Second-order quadrupolar line shapes under molecular dynamics: An additional transition in the extremely fast regime" [Solid State Nucl Mag Reson](#) 84, 14-19 (2017).
11. Lu, J.; Hung, I.; Brinkmann, A.; Gan, Z.; Kong, X. and Wu, G. "Solid-State ^{17}O NMR Reveals Hydrogen-Bonding Energetics: Not All Low-Barrier Hydrogen Bonds Are Strong" [Angew Chem Int Ed](#) 56:22, 6166-6170 (2017).

2016

1. Nagel, A.M., Umatham, R., Rösler, M.B., Ladd, M.E., Litvak, I.M., Gor'kov, P.L., Brey, W.W. and Schepkin, V.D. " ^{39}K and ^{23}Na Relaxation Times and MRI of Rat Head at 21.1 T" [NMR in Biomedicine](#) 29, 759-766 (2016).
2. Schepkin, V.D. "Sodium MRI of glioma in animal models at ultrahigh magnetic fields" [NMR in Biomedicine](#), 29, 2, 175-186 (2016).
3. Chandrashekar, S.; Oparaji, O.; Yang, G. and Hallinan, D.J. " ^7Li MRI Unveils Concentration Dependent Diffusion in Polymer Electrolyte Batteries" [The Electrochemical Society](#), 13, 14, A2988-A2990 (2016).
4. Thanos, P.K., Kim, R., Delis, F., Ananth, M., Chachati, G., Rocco, M.J., Masad, I., Muniz, J.A., Grant, S.C., Gold, M.S., Cadet, J.L. and Volkow, N.D. "Chronic Methamphetamine Effects on Brain Structure and Function in Rats" [PLoS ONE](#) 11:6 e0155457 (2016).
5. Shamsutdinova, N.A.; Gubaidullin, A.T.; Odintsov, B.M.; Larsen, R.J.; Schepkin, V.D.; Nizameev, I.R.; Amirov, R.R.; Zairov, R.R.; Sudakova, S.N.; Podyachev, S.N.; Mustafina, A.R. and Stepanov, A.S. "Polyelectrolyte-Stabilized Nanotemplates Based on Gd(III) Complexes with Macrocyclic Tetra-1,3-diketones as a Positive MR Contrast Agents" [Chem Select](#) 1, 1377-1383 (2016).

6. Budinger, T.F.; Bird, M.D.; Frydman, L.; Long, J.R.; Mareci, T.H.; Rooney, W.D.; Rosen, B.; Schenck, J.F.; Schepkin, V.D.; Sherry, A.D.; Sodickson, D.K.; Springer, C.S.; Thulborn, K.R., Ugurbil, K. and Wald, L.L. "Toward 20 T magnetic resonance for human brain studies: opportunities for discovery and neuroscience rationale" [MAG-MA](#), 29:3, 617-640 (2016).
7. Namespetra, A.M.; Hirsh, D.A.; Hildebrand, M.P.; Sandre, A.R.; Hamaed, H.; Rawson, J.M. and Schurko, R.W. "³⁵Cl solid-State NMR spectroscopy of HCl Pharmaceuticals and their polymorphs in bulk and dosage forms" [Cryst Eng Comm](#) 18: 6213-6232 (2016).
8. Zhang, H.; Hou, G.; Lu, M.; Ahn, J.; Byeon, I.-J.L.; Langmead, C.J.; Perilla, J.R.; Hung, I.; Gor'kov, P.L.; Gan, Z.; Brey, W.W.; Case, D.A.; Schulten, K.; Gronenborn, A.M. and Polenova, T., "HIV-1 Capsid Function Is Regulated by Dynamics: Quantitative. Atomic-Resolution Insights by Integrating Magic-Angle-Spinning NMR, QM/MM, and MD" [J Am Chem Soc](#) 138, 14066-14075 (2016).

2015

1. Leftin, A., Rosenberg, J.T., Solomon, E., Calixto-Bejarano, F.C., Grant, S.C., Frydman, L. "Ultrafast in vivo Diffusion Imaging of Stroke at 21.1 T by Spatiotemporal Encoding" [Magnetic Resonance in Medicine](#) 73:1483-1489 (2015).
2. Kweon, J.J., Fu, R., Kitchen, J.A., Gor'kov, P.L., Brey, W.W., Dalal, N.S. (2015) "Evidence from 900 MHz ¹H MAS NMR of Displaced Behavior of the Model Order-Disorder Antiferroelectric NH₄H₂AsO₄" [J. Phys. Chem. C](#) 119: 5013-5019 (2015).
3. Fu, R., Gunaydin-Sen, O., Chiorescu, I., Dalal, N.S. "NMR detection of dynamical processes in antiferroelectric nanoclusters during the order-disorder transition in NH₄H₂AsO₄" [Phys. Rev. B](#). 91:140192-1-5 (2015).
4. Markiewicz, W.D., Brey, W.W., Cross, T.A., Dixon, I.R., Gor'kov, P.L., Grant, S.C., Marks, E.L., Painter, T.A., Schepkin, V.D. and Swenson, C.A. "A Decade of Experience with the Ultra-Wide-Bore 900 MHz NMR Magnet" [IEEE Trans. Appl. Supercon.](#) 25, 3:1-6 (2015).
5. Sart S, Calixto-Bejarano F, Baird MA, Rosenberg JT, Yan Y, Ma T, Grant SC, Li Y. 2015. "Intracellular Labeling of Pluripotent Stem Cell-derived Neural Progenitor Aggregates with Micron-sized Particles of Iron Oxide" [Cytotherapy](#). 17(1): 98-111 (2015).

6. Yan Y, Bejarano FC, Sart S, Muroski ME, Strouse GF, Grant SC, Li Y. "Cryopreservation of Embryonic Stem Cell-derived Multicellular Neural Aggregates Labeled with Micron-sized Particles of Iron Oxide for Magnetic Resonance Imaging" *Biotech Prog.* 31: 510-21 (2015).
7. Ward, M.E.; Wang, S.L.; Munro, R.; Ritz, E.; Hung, I.; Gor'kov, P.L.; Jiang, Y.J.; Liang, H.J.; Brown, L.S.; Ladizhansky, V. (2015) "In Situ Structural Studies of Anabaena Sensory Rhodopsin in the E. coli Membrane" *Biophysical J.*, 108: 1683-1696 (2015).
8. Lu, M.; Hou, G.; Zhang, H.; Suiter, C.L.; Ahn, J.; Byeon, I.-J.-L.; Perilla, J.R.; Langmead, C.J.; Hung, I.; Gor'kov, P.L.; Gan, Z.; Brey, W.; Aiken, C.; Zhang, P.; Schulten, K.; Gronenborn, A.M. and Polenova, T. "Dynamic allostery governs cyclophilin A-HIV capsid interplay" *P Natl Acad Sci USA* 112, 47, 14617-14622 (2015).
9. Jakobsen, H.J.; Bildsoe, H.; Brorson, M.; Wu, G.; Gor'kov, P.L.; Gan, Z. and Hung, I. "High-Field $O-^{17}$ MAS NMR Reveals $(^1)J(O-^{17}-F-^{127})$ with its Sign and the NMR Crystallography of the Scheelite Structures for $NaIO_4$ and KIO_4 " *J Phys Chem C*, 119, 25, 14434-14442 (2015).
10. Sart, S.; Bejarano, F.C.; Yan, Y.; Grant, S.C. and Li, Y. "Labeling pluripotent stem cell-derived neural progenitors with iron oxide particles for magnetic resonance imaging" *Meth Mol Biol* 1283, 43-52 (2015).
11. Wang, D.W.; Zhong, G.M.; Li, Y.X.; Gong, Z.L.; McDonald, M.J.; Mi, J.X.; Fu, R.; Shi, Z.C. and Yang, Y. "Enhanced Ionic Conductivity of $Li_{3.5}Si_{0.5}P_{0.5}O_4$ with Addition of Lithium Borate" *Solid State Ionics* 283, 109-114 (2015).

2014

1. Murray, D.T. Hung, I. and Cross, T.A. "Assignment of Oriented Sample NMR Resonances from a Three-Transmembrane Helix Protein" *J. Magn. Reson.* 240:34-44 (2014).
2. Schepkin, V.D.; Elumalai M.; Kitchen, J.A.; Qian, C.; Gor'kov, P.L. & Brey, W.W. "In vivo chlorine and sodium MRI of rat brain at 21.1 T" *Magn. Reson. Mater. Phys., Bio. & Med. (MAGMA)*, 27, 63-70 (2014).
3. Rosenberg, J.T., Cisneros B.T., Matson, M., Sachi-Kocher, A., Sokoll, M., Calixto Bejarano, F., Wilson, L.J., Grant, S.C. "Encapsulated gadolinium and dysprosium ions within ultrashort carbon nanotubes for MR microscopy" at 11.75 & 21.1 T *Contrast*

[Media and Molecular Imaging](#), 9:92-99 (2014).

4. Primera-Pedrozo, J.N.; Dugar, S.; Fu, R. and Hernández-Maldonado, A.J. "Determination of the Apparent Crystal Structure of a Highly Faulted UPRM-5 Type Flexible Porous Titanium Silicate via a Polymorph Based Superposition Model: a Rietveld Refinement and a Pair Distribution Function" [J. Phys. Chem. C](#) 118: 8859-8867 (2014).
5. Agyare, E.K., Jaruszewski, K.M., Curran, G.L., Rosenberg, J.T., Grant, S.C., Lowe, V.J., Ramakrishnan, S., Paravastu, A.K., Poduslo, J.F., Kandimalla, K.K. "Engineering theranostic nanovehicles capable of targeting cerebrovascular amyloid deposits" [J. Control Release](#). 185:121-9 (2014).
6. Perrin, B.S. Jr.; Tian, Y; Fu, R.; Grant, C.V.; Chekmenev, E.Y.; Wieczorek, W.E.; Dao, A.E.; Hayden, R.M.; Burzynski, C.M.; Venable, R.M.; Sharma, M.; Opella, S.J.; Pastor, R.W.; and Cotten, M.L. "High-Resolution Structures and Orientations of Antimicrobial Peptides Piscidin a and Piscidin 3 in Fluid Bilayers Reveal Tilting, Kinking, and Bilayer Immersion" (Cover story) [J. Am. Chem. Soc.](#) 136: 3491-3504 (2014).
7. Hildebrand, M.; Hamaed, H.; Namespetra, A.M.; Donohue, J.M.; Fu, R.; Hung, I.; Gan, Z. and Schurko, R.W. "³⁵Cl Solid-State NMR of HCl Salts of Active Pharmaceutical Ingredients: Structural Prediction, Spectral Fingerprinting and Polymorph Recognition" [Cryst. Eng. Comm.](#) 16: 7334-7356 (2014).
8. Kweon, J.J.; Fu, R.; Steven, E.; Lee, C.E. and Dalal, N.S. "High Field MAS-NMR and Conductivity Study of the Superionic Conductor LiH₂PO₄: Critical Role of Physisorbed Water in Its Protonic Conductivity" [J. Phys. Chem. C](#) 118: 13387-13393 (2014).
9. Jaruszewski, K.M., Curran, G.L., Swaminathan S.K., Rosenberg J.T., Grant S.C., Ramakrishnan S., Lowe V., Podulso J., Kandimalla K.K. "Multimodal Nanoprobes to Target Cerebrovascular Amyloid in Alzheimer's Disease Brain" [Biomaterials](#) 35:1967-1976 2014).
10. Qian, C., Gor'kov, P.L. "Double resonance MRI coil design" [US Patent](#) No.8680863 (2014).
11. Hung, I., Gan, Z. "Fast REDOR with CPMG multiple-echo acquisition" [J. Magn. Reson.](#) 238:82-86 (2014).
12. Shemesh, N., Rosenberg, J.T., Dumez, J.N., Grant, S.C., Frydman, L., "Metabolic T₁ dynamics and longitudinal-relaxation-enhancement in vivo at ultrahigh magnetic fields on ischemia" [J. Cereb. Blood Flow Metab.](#) 34:1810-1817 (2014).

13. Shemesh, N. Rosenberg, J.T., Dumez, J.N., Muniz, J.A., Grant, S.C., Frydman, L. "Metabolic properties in stroked rats revealed by relaxation-enhanced magnetic resonance spectroscopy at ultrahigh fields" [Nature Commun.](#) 5:4958 (2014).
14. Rosenberg JT, Cisneros BT, Matson M, Sokoll M, Sachi-Kocher A, Bejarano FC, Wilson LJ, Grant SC. "Encapsulated gadolinium and dysprosium ions within ultra-short carbon nanotubes for MR microscopy at 11.75 and 21.1 T." [Contrast Media Mol Imaging.](#) 9:92-99 (2014).
15. Truong, M.L., Harrington, M.G., Schepkin, V.D., & Chekmenev, E.Y. "Sodium 3D concentration mapping (COMA 3D) using ^{23}Na and proton" [MRI J. Magn. Reson](#) 247:88-95 (2014).
16. Schepkin, V.D., Levenson, C.W. "Tumor resistance to chemo-therapy and sodium/diffusion MRI" [US Patent](#) 8,880,146 (2014).
17. Jakobsen, H.J.; Bildsoe, H.; Brorson, M.; Gan, Z. and Hung, I. (2014) "Quantitative Dynamics and Structure for Crystalline Cs_2WO_4 and KMnO_4 Determined from High-Field O-17 Variable-Temperature MAS NMR Experiments" [J. Phys. Chem. C](#), 118: 20639-20646 (2014).

2013

1. Sharma, M., Yi, M., Dong, H., Qin, H., Busath, D.D., Zhou, H.-X. and Cross, T.A. "Membrane Proteins, Mechanisms of Action and Uses Thereof" [US Patent](#) 8,581,584 (2013).
2. Foroutan, P., Murray, M.E., Fujioka, S., Schweitzer, K.J., Dickson, D.W., Wszolek, Z.K., Grant, S.C. "Progressive Supranuclear Palsy: High-Field-Strength MR Microscopy in the Human Substantia Nigra and Globus Pallidus" [Radiology](#) 266:280-288 (2013).
3. Das, N., Murray, D.T. & Cross, T.A. "Lipid Bilayer Preparations of Helical Membrane Proteins for Oriented and Magic Angle Spinning Solid State NMR Samples" [Nat. Protocols](#) 11:2256-2270 (2013).
4. Murray, D., Das, N., Cross, T.A. "Solid State NMR Strategy for Characterizing Native Membrane Protein Structures" [Accounts of Chemical Research](#) 46:2172-2181 (2013).
5. Qian, C., "Impedance matching in NMR probe with an adjustable segmented transmission line" [US Patent](#) 8,525,518 (2013).

6. Han, Y.; Hou, G.; Suiter, C.L.; Ahn, J.; Byeon, I.-J.L.; Lipton, A.S.; Burton, S.; Hung, I.; Gor'kov, P.L.; Gan, Z.; Brey, W.W.; Rice, D.; Gronenborn, A.M. and Polenova, T. "Magic Angle Spinning NMR Reveals Sequence-Dependent Structural Plasticity, Dynamics, and the Spacer Peptide 1 Conformation in HIV-1 Capsid Protein Assemblies" *J. Am. Chem. Soc.*, 135:17793-17803 (2013).
7. Rosenberg, J.T., Sellgren, K., Bejarano, F.C., Baird, M., Davidson, M., Teng, M., Grant, "S.C. MR contrast and biological impacts of intracellular superparamagnetic iron oxides on human mesenchymal stem cells with long-term culture and hypoxic exposure" *Cytotherapy* 15:307-22 (2013).
8. Jakobsen, H.J., Bildsøe, H., Brorson, M., Gan, Z., Hung, I. "Direct observation of ^{17}O - $^{185/187}\text{Re}$ ^1J -coupling in perrhenates by solid-state ^{17}O VT MAS NMR: Temperature and self-decoupling effects" *J. Magn. Reson.* 230:98-110 (2013).
9. Kong, X., Shan, M., Terskikh, V., Hung, I., Gan, Z., Wu, G. "Solid-State ^{17}O NMR of Pharmaceutical Compounds: Salicylic Acid and Aspirin" *J. Phys. Chem. B* 117:9643-9654 (2013).

2012

1. Schepkin, V.D., Bejarano, F.C., Morgan, T., Gower-Winter, S., Ozambela, M. & Levenson, C. "In Vivo Magnetic Resonance Imaging of Sodium and Diffusion in Rat Glioma at 21.1T" *Magn. Reson. Med.* 67:1159-1166 (2012).
2. Qian, C.; Masad, I.S.; Rosenberg, J.T.; Elumalai, M.; Brey, W.W.; Grant, S.C. and Gor'kov, P.L. "A volume birdcage coil with an adjustable sliding tuner ring for neuro-imaging in high field vertical magnets: Ex and in vivo applications at 21.1 T" *J. Magn. Reson.*, 221:110-116 (2012).
3. Vanderlaan, M.H.; Seshadhria, M.; Barrios, M.N.; Brey, W.W.; Schepkin, V.D. and Van Sciver, S.W. "MRI of Adsorbed Water in Solid Foams at 21.1 T" *Int. J. Heat and Mass Transfer* 55:69-72 (2012).
4. Rosenberg, J.T., Sachi-Kocher, A., Davidson, M., & Grant, S.C. "Intracellular SPIO Labeling of Microglia: High Field Considerations and Limitations for MR Microscopy" *Contrast Media and Molecular Imaging* 7:121-129 (2012).
5. Arévalo-Hidalgo, A.G.; Dugar, S.; Fu, R. and Hernández-Maldonado, A.J. " ^1H and ^{23}Na MAS NMR spectroscopy of cationic species in CO_2 selective alkaline earth metal porous silicoaluminophosphates prepared via liquid and solid state ion exchange" *J. Solid State Chemistry* 191: 57-62. (2012)

- Alzghoul, L., Bortolato, M., Delis, F., Thanos, P.K., Darling, R.D., Godar, S.C., Zhang, J., Grant, S., Wang, G.J., Simpson, K.L., Chen, K., Volkow, N.D., Lin, R.C., Shih, J.C. Altered cerebellar organization and function in monoamine oxidase A hypomorphic mice [Neuropharmacology](#) Dec 63(7):1208-17 (2012).

2011

- Fujioka S, Murray ME, Foroutan P, Schweitzer KJ, Dickson DW, Grant SC, Wszolek ZK. "Magnetic resonance imaging with 21.1T and pathological correlations – diffuse Lewy body disease" [Rinsho Shinkeigaku](#). 51:603-607 (2011).
- Jakobsen, H.J., Bildsøe, H., Skibsted, J., Brorson, M., Hung, I., Gan, Z. "Synthesis of ^{17}O -Labeled Cs_2WO_4 and Its Ambient- and Low-Temperature Solid-State ^{17}O " [MAS NMR Spectra Inorg. Chem.](#) 50:7676-7684 (2011).
- Harrington, M.G., Chekmenev, E.Y., Schepkin, V., Fonteh, A.N. & Arakaki, X. "Sodium MRI in a Rat Migraine Model and a NEURON Simulation Study Support a Role for Sodium in Migraine" [Cephalagia](#) 31:1254-1265 (2011).

2010

- Sadleir RJ, Grant SC, Woo EJ. "Can high-field MREIT be used to directly detect neural activity? theoretical considerations" [NeuroImage](#). 74(20): 1654 (2010).
- Schweitzer KJ, Foroutan P, Dickson DW, Broderick DF, Klose U, Berg D, Wszolek ZK, Grant SC. "A novel approach to dementia: High Resolution 1H MRI of the Human Hippocampus Performed at 21.1 T." [Neurology](#). 74(20): 1654 (2010).
- Rosenberg JT, Kogot JM, Lovingood DD, Strouse GF, Grant SC. "Intracellular Bi-modal Nanoparticles Based on Quantum Dots for High-Field MRI at 21.1 T." [Magn. Res. Med.](#) Sep 64(3):871-82 (2010).
- Sharma, M., Yi, M., Dong, H., Qin, H., Petersen, E., Busath, D.D., Zhou, H.-X. & Cross, T.A. "Insight into the Mechanism of the Influenza A Proton Channel from a Structure in a Lipid Bilayer" [Science](#) 330:509-512 (2010).
- Cross, T.A., Brey, W.W., Smirnov, A. & Chekmenev, E.Y. "Solid State NMR Method for Screening Cell Membrane Protein Binding Drug Candidates" [U.S. Patent](#) 7,674,595 (2010).
- Cross, T.A., Brey, W.W., Smirnov, A. & Chekmenev, E.Y. "Solid State NMR Method for Screening Cell Membrane Protein Binding Drug Candidates" [U.S. Patent](#)

7,678,546 (2010).

7. Schepkin, V.D., Brey, W.W., Gor'kov, P.L. & Grant, S.C. "Initial In Vivo Rodent Sodium and Proton Imaging at 21.1T" [Magn. Reson. Imaging](#) 28:400-407 (2010).

2009

1. Sharma R. "Microimaging of hairless rat skin by magnetic resonance at 900 MHz." [Magn Reson Imaging](#). 27(2): 240-55 (2009).
2. Fu, R., "Efficient Heteronuclear Dipolar Decoupling in NMR of Static Solid Samples using Phase-Wiggled Two-Pulse Phase Modulation" [Chem. Phys. Lett.](#) 483, 147-153 (2009).
3. Fu, R., Gordon, E.D., Hibbard, D.J., and Cotten M., "High Resolution Heteronuclear Correlation NMR Spectroscopy of an Antimicrobial Peptide in Aligned Lipid Bilayers: Peptide-Water Interactions at the Water-Bilayer Interface" [J. Am. Chem. Soc.](#) 131, 10830-10831 (2009).

2008

1. Walter GA, Santra S, Thattaliyath B and Grant SC. "Use of (Para)magnetic nanoparticles for labeling and tracking of stem cells and progenitors. *Nanoparticles in Biomedical Imaging: Emerging Technologies and Applications*" [JWM Bulte & MMJ Modo](#) (Eds.), Springer (2008).
2. Hamaed, H., Pawlowski, J.M., Cooper, B.F.T., Fu, R. Eichhorn, S.H. & Schurko, R.W. "Application of Solid-State ^{35}Cl NMR to the Structural Characterization of Hydrochloride Pharmaceuticals and their Polymorphs" [J. Am. Chem. Soc.](#) 130: 11056-11065 (2008).
3. Page, R., Kim, S., & Cross, T.A. "Transmembrane Helix Uniformity Examined by Spectral Mapping of Torsion Angles" [Structure](#) 16: 787-797 (2008).

2007

1. McNeil, S.A., Gor'kov, P.L., Struppe, J., Brey, W.W., & Long, J.R. "Optimizing ssNMR experiments for dilute proteins in heterogeneous mixture at high fields" [Magn. Reson. Chem.](#) 45: S209-S220 (2007).
2. Page, R., Li, C., Hu, J., Gao, F.P. & Cross, T.A. "Lipid Bilayers: An Essential Environment for the Understanding of Membrane Proteins" [Magn. Reson. Chem.](#) 45: S2-

S11 (2007).

3. Hu, J., Qin, H., Li, C., Sharma, M., Cross, T.A. & Gao, F.P. "Structural Biology of Transmembrane Domains: Efficient Production and Characterization of Transmembrane Peptides by NMR" *Protein Sci.* 16: 2153-2165 (2007).
4. Gor'kov, P.L., Chekmenev, E.Y., Li, C., Cotten, M., Buffy, J.J., Traaseth, N.J., Veglia, G. & Brey, W.W. "Using Low-E resonators to reduce RF heating in biological samples for static solid-state NMR up to 900 MHz" *J. Magn. Reson.* 185: 77-93 (2007).
5. Li, C., Gao, F.P., Qin, H., Chase, R. & Cross, T.A. "Uniformly Aligned Full-Length Membrane Protein in Liquid Crystalline Bilayers" *J. Am. Chem. Soc.* 129:5304-5305 (2007).
6. Fu, R., Gunaydin-Sen, O. & Dalal, N.S. "Simultaneous Supralinear Line-narrowing and Sensitivity Enhancement at High Fields in Magic Angle Spinning NMR of Spin-1/2 Nuclei in Solids" *J. Am. Chem. Soc.* 129: 470-471 (2007).

2006

1. Chekmenev, E.Y., Jones, S.M., Nikolayeva, Y.N., Vollmar, B.S., Wagner, T.J., Gor'kov, P.L., Brey, W.W., Manion, M.N., Daugherty, K.C. & Cotten, M. "High-Field NMR Studies of Molecular Recognition and Structure-Function Relationships in Antimicrobial Piscidins at the Water-Lipid Bilayer Interface" *J. Am. Chem. Soc.* 128, 5308-5309 (2006).
2. Page, R.C., Moore, J.D., Nguyen, H.B., Sharma, M., Chase, R., Gao, F.P., Mobley, C.K., Sanders, C.R., Ma, L., Sonnichsen, F.D., Lee, S., Howell, S.C., Opella, S.J. & Cross, T.A. "Comprehensive Evaluation of Solution Nuclear Magnetic Resonance Spectroscopy Sample Preparation for Helical Integral Membrane Proteins" *J. Struct. Funct. Genomics* 7:51-64 (2006).
3. Hu, J., Chekmenev, E. and Cross, T.A. (2006) Anisotropic Chemical Shift Perturbation by Ions in Conducting Channels in *The Handbook of Modern Magnetic Resonance* (Asakura, T., Saito, H., Ando, I., Eds.) Kluwer Academic Press (2006).

2005

1. Dixon, I.R., Markiewicz, W.D., Brey, W.W., and Shetty, K.K. "Performance of the Ultra Wide Bore 900 MHz NMR Magnet at the National High Magnetic Field Laboratory" *IEEE Trans. Appl. Supercond.*, 15 (2), 1334-1337 (2005).

2. Lapina, O.B., Khabibulin, D.F., Romanenko, K.V., Gan, Z., Zuev, M.G., Krasil'nikov, V.N., Federov, V.E. "*⁹³Nb NMR Chemical Shift Scale for Niobia Systems*" **Solid State NMR** 28:117-124 (2005).
3. Fu, R, Brey, W.W., Shetty, K., Gor'kov, P., Saha, S., Long, J.R., Grant, S.C., Chekmenev, E.Y., Hu, J., Gan, Z., Sharma, M., Logan, T.M., Bruschiweiler, R., Edison, A., Blue, A., Dixon, I.R., Markiewicz, W.D. & Cross, T.A. "*Ultra-Wide Bore 900 MHz High-Resolution NMR at the National High Magnetic Field Laboratory*" (cover story) **J. Magn. Reson.** 177:1-8. (2005).
4. Hu, J., Chekmenev, E., Gan, Z., Gor'kov, P., Saha, S., Brey, W.W. & Cross, T.A. "*Ion Solvation by Channel Carbonyls Characterized by ¹⁷O Solid State NMR at 21T*" **J. Am. Chem. Soc.** 127:11922-11923 (2005).