

Two Postdoctoral Fellowship in Hyperpolarized Magnetic Resonance At Wayne State University and Karmanos Cancer Center (Detroit, MI, USA)

Prof. Ed Chekmenev from Wayne State University (WSU) invites applications for two postdoctoral research fellowships in hyperpolarized magnetic resonance. We seek a motivated and ambitious scholar to conduct research on DOD/NIH/NSF funded projects to develop hyperpolarized NMR techniques and instrumentation in the areas of cancer and pulmonary imaging using low-field MRI. Several hyperpolarization techniques are pursued including PHIP, SABRE & SEOP with primary emphasis on biomedical applications of NMR hyperpolarization. The PI lab has a wide range of automated hyperpolarization equipment: two parahydrogen generators, two SEOP clinical-scale hyperpolarizer, PHIP polarizer and others. In addition to the high-field MRI scanners available at the Institution, the low-field hyperpolarized multi-nuclear MRI facility will have three MRI scanners: 0.05 T for rodents, and 0.15 T and 0.35 T clinical MRI scanners. The lab also offers many low-field NMR spectroscopy setups and other instrumentation. A wide range of projects is available: from pulse-sequence and instrumentation development to performing *in vivo* MRI experiments. There is a tremendous opportunity to learn about new techniques and instrumentation.

Recent publications include:

- 1) Barskiy, D. A.; Shchepin, R. V.; Coffey, A. M.; Theis, T.; Warren, W. S.; Goodson, B. M.; Chekmenev, E. Y. Over 20% ^{15}N Hyperpolarization in under One Minute for Metronidazole, an Antibiotic and Hypoxia Probe. *J. Am. Chem. Soc.* **2016**, *138*, 8080–8083.
- 2) Shchepin, R. V.; Barskiy, D. A.; Coffey, A. M.; Manzanera Esteve, I. V.; Chekmenev, E. Y. Efficient Synthesis of Molecular Precursors for Para-Hydrogen-Induced Polarization of Ethyl Acetate-1- ^{13}C and Beyond. *Angew. Chem. Int. Ed.* **2016**, *55*, 6071-6074.
- 3) Theis, T.; Truong, M. L.; Coffey, A. M.; Shchepin, R. V.; Waddell, K. W.; Shi, F.; Goodson, B. M.; Warren, W. S.; Chekmenev, E. Y. Microtesla Sabre Enables 10% Nitrogen-15 Nuclear Spin Polarization. *J. Am. Chem. Soc.* **2015**, *137*, 1404-1407.
- 4) Hövener, J.-B.; Pravdivtsev, A. N.; Kidd, B.; Bowers, C. R.; Glöggler, S.; Kovtunov, K. V.; Plaumann, M.; Katz-Brull, R.; Buckenmaier, K.; Jerschow, A.; Reineri, F.; Theis, T.; Shchepin, R. V.; Wagner, S.; Bhattacharya, P.; Zacharias, N. M.; Chekmenev, E. Y. Parahydrogen-Based Hyperpolarization for Biomedicine. *Angew. Chem. Int. Ed.* **2018**, DOI 10.1002/anie.201711842.

The fellows will be joining a network of hyperactive collaborations with Duke University, North Carolina State University (NCSU), USA; International Tomography Center (ITC), Russia; Southern Illinois University Carbondale, USA; University of Nottingham, UK; Harvard University; and others. The initial appointment will be made for 1 year with starting date in late summer or fall 2018. The successful fellow is expected to be re-appointed for at least one more year.

Requirements: The ideal candidates need to have strong background in NMR. Experimental background in physical chemistry, MR physics, or at the interface of the physical sciences, NMR and biomedicine as reflected in a recent PhD degree from a relevant area, is desirable. An array of state-of-the-art facilities exists at WSU to complement our low field hyperpolarized studies, including clinical and preclinical MRI scanners, next-door high-field NMR, X-ray and mass-spec facilities.

How to apply: Inquiries, or application package (as a single PDF document) including a cover letter (with statement of career goals, preferred start date and accomplishments), curriculum vitae, and contact information of at least three references should be addressed to Prof. Ed Chekmenev at Chekmenev@wayne.edu