Facing and Overcoming Sensitivity Challenges in Biomolecular NMR Spectroscopy - DTU Orbit (12/12/2018)

Facing and Overcoming Sensitivity Challenges in Biomolecular NMR Spectroscopy

In the Spring of 2013, NMR spectroscopists convened at the Weizmann Institute in Israel to brainstorm on approaches to improve the sensitivity of NMR experiments, particularly when applied in biomolecular settings. This multi-author interdisciplinary Review presents a state-of-the-art description of the primary approaches that were considered. Topics discussed included the future of ultrahigh-field NMR systems, emerging NMR detection technologies, new approaches to nuclear hyperpolarization, and progress in sample preparation. All of these are orthogonal efforts, whose gains could multiply and thereby enhance the sensitivity of solid- and liquid-state experiments. While substantial advances have been made in all these areas, numerous challenges remain in the quest of endowing NMR spectroscopy with the sensitivity that has characterized forms of spectroscopies based on electrical or optical measurements. These challenges, and the ways by which scientists and engineers are striving to solve them, are also addressed.

General information
State: Published
Organisations: Department of Electrical Engineering, Biomedical Engineering, Swiss Federal Institute of Technology Lausanne, University of York, University of Florida, Bruker BioSpin GmbH, Germany, Max Planck Institute for Biophysical Chemistry, Massachusetts Institute of Technology, Texas A&M University, RIKEN, Goethe University Frankfurt, Radboud University Nijmegen, Weizmann Institute of Science, Florida State University, University of Florence
Pages: 9162-9185
Publication date: 2015
Peer-reviewed: Yes

Publication information
Volume: 54
Issue number: 32
ISSN (Print): 1433-7851
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 11.31 SJR 6.155 SNIP 2.165
Web of Science (2017): Impact factor 12.102
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 10.8 SJR 5.954 SNIP 2.146
Web of Science (2016): Impact factor 11.994
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 11.13 SJR 5.888 SNIP 2.225
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 10.84 SJR 5.811 SNIP 2.307
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 10.7 SJR 5.702 SNIP 2.198
Web of Science (2013): Impact factor 11.336
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 10.55 SJR 6.407 SNIP 2.329
Web of Science (2012): Impact factor 13.734
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 10.75 SJR 6.063 SNIP 2.361
Web of Science (2011): Impact factor 13.455
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 5.921 SNIP 2.303
Web of Science (2010): Impact factor 12.73
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 5.571 SNIP 2.246
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 5.589 SNIP 2.153
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 4.528 SNIP 1.888
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 4.868 SNIP 2.165
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 4.797 SNIP 2.279
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 4.247 SNIP 2.198
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 3.559 SNIP 2.117
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 4.012 SNIP 2.142
Scopus rating (2001): SJR 3.788 SNIP 2.069
Scopus rating (2000): SJR 3.447 SNIP 2.1
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 3.529 SNIP 2.046
Original language: English
Keywords: NMR probeheads, NMR spectroscopy, Nuclear hyperpolarization, Sensitivity enhancement, Ultrahigh magnetic fields
DOI's: 10.1002/anie.201410653
Source: FindIt
Source-ID: 275562439
Research output: Research - peer-review → Journal article – Annual report year: 2015