Research outputs:

**Analysis of dDNP NMR metabolic data from cancer cells**
Research output: Research · peer-review › Conference abstract for conference – Annual report year: 2018

**A narrow line UV-induced non-persistent radical to generate highly polarized transportable glucose solid samples**
Research output: Research · peer-review › Conference abstract for conference – Annual report year: 2018

**Identification of Intracellular and Extracellular Metabolites in Cancer Cells Using $^{13}$C Hyperpolarized Ultrafast Laplace NMR**
Research output: Research · peer-review › Journal article – Annual report year: 2018

**Liquid-State Polarization of 30% through Photo-Induced Non-Persistent Radicals on $^{13}$C Pyruvic Acid**
Research output: Research · peer-review › Conference abstract for conference – Annual report year: 2018

**Liquid-State $^{13}$C Polarization of 30% through Photoinduced Nonpersistent Radicals**
Research output: Research · peer-review › Journal article – Annual report year: 2018

**Stable isotope-resolved analysis with quantitative dissolution dynamic nuclear polarization**
Research output: Research · peer-review › Journal article – Annual report year: 2017

**A narrow line UV-induced non-persistent radical in view of generating highly polarized transportable glucose solid samples**
Research output: Research › Conference abstract for conference – Annual report year: 2018

**Hyperpolarized $^{133}$Cs is a sensitive probe for real-time monitoring of biophysical environments**
Research output: Research · peer-review › Journal article – Annual report year: 2017

**Measuring glucose cerebral metabolism in the healthy mouse using hyperpolarized C-13 magnetic resonance**
Research output: Research · peer-review › Journal article – Annual report year: 2017

**Preparation of Radical-Free Hyperpolarized Water using Photo-induced non-persistent Radicals on a "SpinLab-like" dissolution-DNP Polarizer**
Research output: Research · peer-review › Conference abstract for conference – Annual report year: 2017

**Quantifying Biochemical Activities in Living Cells with $^{13}$C dDNP NMR**
Research output: Research · peer-review › Conference abstract for conference – Annual report year: 2017
Hyperpolarized 1-13C-1,1-bis(acetoxy(methyl))-2,2'-cyclopropane as metabolic marker for mr
Research output: Research › Patent – Annual report year: 2016

Difference between Extra- and Intracellular T1 Values of Carboxylic Acids Affects the Quantitative Analysis of Cellular Kinetics by Hyperpolarized NMR
Research output: Research - peer-review › Journal article – Annual report year: 2016

Dissolution Dynamic Nuclear Polarization capability study with fluid path
Research output: Research - peer-review › Journal article – Annual report year: 2016

High-field dissolution dynamic nuclear polarization of [1-13C]pyruvic acid
Research output: Research - peer-review › Journal article – Annual report year: 2016

Probing treatment response of glutaminolytic prostate cancer cells to natural drugs with hyperpolarized [5-13C]glutamine
Research output: Research - peer-review › Poster – Annual report year: 2017

Single-Shot-RARE for rapid 3D hyperpolarized metabolic ex vivo tissue imaging: RF-pulse design for semi-dense spectra
Research output: Research - peer-review › Poster – Annual report year: 2016

Hyperpolarized esters as metabolic markers in mr
Research output: Research › Patent – Annual report year: 2015

Hyperpolarized 2-oxoglutarate as metabolic agent in mr
Research output: Research › Patent – Annual report year: 2015

Triarylmethyl radicals.
Research output: Research › Patent – Annual report year: 2015

Intra-operative cancer diagnosis based on a hyperpolarized marker
Research output: Research › Patent – Annual report year: 2015

Hyperpolarized amino acids
Research output: Research › Patent – Annual report year: 2015

3D metabolic ex vivo sample imaging of hyperpolarized compounds using a 3D single-shot RARE (3D SS-RARE) sequence, combining spectral RF selectivity with under-sampled spectral encoding at signal read-out
Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2015

Hyperpolarized [1,3-C-13(2)]ethyl acetoacetate is a novel diagnostic metabolic marker of liver cancer
Research output: Research › Journal article – Annual report year: 2015

Myocardial fatty acid metabolism probed with hyperpolarized [1-13C]octanoate
Research output: Research - peer-review › Journal article – Annual report year: 2015

NMR Insights into the Inner Workings of Living Cells
Research output: Research - peer-review › Journal article – Annual report year: 2015

Probing treatment response of glutaminolytic prostate cancer cells to natural drugs with hyperpolarized [5-C-13]glutamine: Glutaminolysis to Measure Drug Response in Cancer Cells
Research output: Research - peer-review › Journal article – Annual report year: 2015
Hyperpolarized NMR Probes for Biological Assays
Research output: Research - peer-review \ Journal article – Annual report year: 2014

Non-invasive in-cell determination of free cytosolic [NAD+]/[NADH] ratios using hyperpolarized glucose show large variations in metabolic phenotypes
Research output: Research - peer-review \ Journal article – Annual report year: 2014

Composition comprising acetic anhydride and a gadolinium complex, and method for the use in hyperpolarisation mri analysis.
Research output: Research › Patent – Annual report year: 2013

Process for preparing hyperpolarized substrates and method for mri
Research output: Research › Patent – Annual report year: 2013

In vivo and in vitro liver cancer metabolism observed with hyperpolarized [5-C-13]glutamine
Research output: Research - peer-review \ Journal article – Annual report year: 2013

Real-Time DNP NMR Observations of Acetic Acid Uptake, Intracellular Acidification, and of Consequences for Glycolysis and Alcoholic Fermentation in Yeast
Research output: Research - peer-review \ Journal article – Annual report year: 2014

Development of Dissolution DNP-MR Substrates for Metabolic Research
Research output: Research - peer-review \ Journal article – Annual report year: 2012

A hyperpolarized choline molecular probe for monitoring acetylcholine synthesis
Research output: Research - peer-review \ Journal article – Annual report year: 2011

Detection of tumor glutamate metabolism in vivo using 13C magnetic resonance spectroscopy and hyperpolarized [1-13C]glutamate
Research output: Research - peer-review \ Journal article – Annual report year: 2011

Deuteration of a molecular probe for DNP hyperpolarization - a new approach and validation for choline chloride
Research output: Research - peer-review \ Journal article – Annual report year: 2011

Metabolic pathway visualization in living yeast by DNP-NMR
Research output: Research - peer-review \ Journal article – Annual report year: 2011

Quantitative dynamic nuclear polarization-NMR on blood plasma for assays of drug metabolism
Research output: Research - peer-review \ Journal article – Annual report year: 2011

Mr imaging agent or medium compressing hperpolarised 13c alanine and methods of imaging wherein such an imaging medium is used.
Research output: Research › Patent – Annual report year: 2010

Imaging of branched chain amino acid metabolism in tumors with hyperpolarized 13C ketoisocaproate
Research output: Research - peer-review \ Journal article – Annual report year: 2010

Study of molecular interactions with 13C DNP-NMR
Research output: Research - peer-review \ Journal article – Annual report year: 2010
Method to produce hyperpolarised amino acids and aminosulphonic acids
Research output: Research › Patent – Annual report year: 2009

Mr imaging agent or medium compressing hyperpolarised 13c alanine and methods of imaging wherein such an imaging medium is used.
Research output: Research › Patent – Annual report year: 2009

Mr imaging agent, imaging medium and methods of imaging wherein such an imaging medium is used
Research output: Research › Patent – Annual report year: 2009

Composition and method for generating a metabolic profile using 13c-mr detection
Research output: Research › Patent – Annual report year: 2009

Method of Cardiac Imaging
Research output: Research › Patent – Annual report year: 2009

Imaging medium comprising hyperpolarised 13c-acetate and use thereof
Research output: Research › Patent – Annual report year: 2009

Imaging medium comprising hyperpolarised 13 c-lactate and use thereof.
Research output: Research › Patent – Annual report year: 2009

Detection of low-populated reaction intermediates with hyperpolarized NMR
Research output: Research - peer-review › Journal article – Annual report year: 2009

Hyperpolarized Amino Acids for In Vivo Assays of Transaminase Activity
Research output: Research - peer-review › Journal article – Annual report year: 2009

Production of hyperpolarized [1,4-C-13(2)]malate from [1,4-C-13(2)]fumarate is a marker of cell necrosis and treatment response in tumors
Research output: Research - peer-review › Journal article – Annual report year: 2009

Tissue-specific Short Chain Fatty Acid Metabolism and Slow Metabolic Recovery after Ischemia from Hyperpolarized NMR in Vivo
Research output: Research - peer-review › Journal article – Annual report year: 2009

Method to produce hyperpolarised carboxylates and sulphonates in the presence of inorganic cations.
Research output: Research › Patent – Annual report year: 2008

C-13 MR spectroscopy measurements of glutaminase activity in human hepatocellular carcinoma cells using hyperpolarized C-13-labeled glutamine
Research output: Research - peer-review › Journal article – Annual report year: 2008

Magnetic resonance imaging of pH in vivo using hyperpolarized 13C-labelled bicarbonate.
Research output: Research - peer-review › Journal article – Annual report year: 2008

Method of cardiac imaging with the use of hyperpolarized 13c-pyruvate
Research output: Research › Patent – Annual report year: 2007

Detecting tumor response to treatment using hyperpolarized 13C magnetic resonance imaging and spectroscopy.
Research output: Research - peer-review › Journal article – Annual report year: 2007
Nmr-based methods for detecting ligands, where the ligand or target are hyperpolarized and the nmr-spectrum is compared with a reference spectrum of the ligand or target
Research output: Research › Patent – Annual report year: 2006

Metabolic imaging by hyperpolarized C-13 magnetic resonance imaging for in vivo tumor diagnosis
Research output: Research - peer-review › Journal article – Annual report year: 2006

Method of producing a composition, composition and its use
Research output: Research › Patent – Annual report year: 2006

Method for phenotyping using nmr spectroscopy
Research output: Research › Patent – Annual report year: 2005

Methods and compound mixtures for determining protein activity using nmr spectroscopy
Research output: Research › Patent – Annual report year: 2005

NMR-based methods for detecting ligands, where the ligand or target are hyperpolarised and the nmr-spectrum is compared with a reference spectrum of the ligand or target
Research output: Research › Patent – Annual report year: 2005

Method for characterizing metabolic stability of a drug
Research output: Research › Patent – Annual report year: 2005

In vitro method for characterizing the metabolic stability of a hyperpolarized drug candidate
Research output: Research › Patent – Annual report year: 2005

Generating highly polarized nuclear spins in solution using dynamic nuclear polarization
Research output: Research - peer-review › Conference article – Annual report year: 2004

Improvement of hydrogen bond geometry in protein NMR structures by residual dipolar couplings - an assessment of the interrelation of NMR restraints
Research output: Research - peer-review › Journal article – Annual report year: 2004

Increase in signal-to-noise ratio of > 10,000 times in liquid-state NMR
Research output: Research - peer-review › Journal article – Annual report year: 2003

Barley lipid transfer protein, LTP1, contains a new type of lipid-like post-translational modification
Research output: Research - peer-review › Journal article – Annual report year: 2001

Identification of a neuritogenic ligand of the neural cell adhesion molecule using a combinatorial library of synthetic peptides
Research output: Research - peer-review › Journal article – Annual report year: 1999

Pulse sequences for measurement of one-bond N-15-H-1 coupling constants in the protein backbone
Research output: Research - peer-review › Journal article – Annual report year: 1999

Solution structure of barley lipid transfer protein complexed with palmitate. Two different binding modes of palmitate in the homologous maize and barley nonspecific lipid transfer proteins
Research output: Research - peer-review › Journal article – Annual report year: 1998
Barley lipid-transfer protein complexed with palmitoyl CoA: the structure reveals a hydrophobic binding site that can expand to fit both large and small lipid-like ligands

Research output: Research - peer-review › Journal article – Annual report year: 1997

Projects:

Metabolomics using Dissolution DNP-NMR
Project: PhD

Metabolic Responses to Bacterial Pathogens
Project: PhD

Activities:

Quantifying Biochemical Activities in Living Cells with $^{13}$C dDNP NMR
Activity: Talks and presentations › Conference presentations

A narrow line UV-induced non-persistent radical in view of generating highly polarized transportable glucose solid samples
Activity: Talks and presentations › Conference presentations

Preparation of Radical-Free Hyperpolarized Water using Photo-induced non-persistent Radicals on a “SpinLab-like” dissolution-DNP Polarize
Activity: Talks and presentations › Conference presentations