

## Description

MCW inventors have developed a novel receive-only surface coil for functional magnetic resonance imaging (fMRI) with a significantly higher sensitivity compared to a standard fMRI coil of similar size. The invented assembly is an inductively coupled system consisting of a self-resonant spiral (SRS) fabricated from silver foil encompassed by an outer equalization coil.

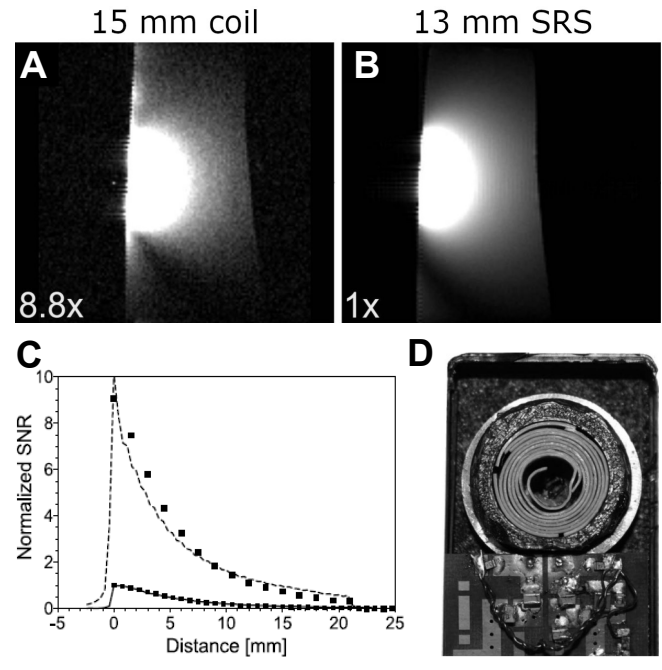
## Problem Solved

In general, MRI scan sensitivity is limited by the existing geometry of receive coil arrays. These limitations lead to long scan times for patients in the clinic and unrealized image resolution when using modern 3T and 7T scanners.

**This novel SRS coil design overcomes these geometric limits and produces higher fMRI resolution along with drastically shorter scanning times for an equivalent coil geometry.** For example, the SRS can reduce the scanning time from the standard 20 minute scan to less than 1 minute or increase the voxel resolution by a factor of 4.

## Application

This novel surface coil design has the potential to be a more effective receiver in clinical surface coil arrays for anatomical and fMRI studies.



## Key Advantages

- Reduces scanning time by nearly 100-fold
- Significantly higher image resolution
- Improved signal-to-noise ratio

**Stage of Development:**  
Prototype tested with 9.4T MRI

**Intellectual Property Status:**  
US Patent Issued (11,385,307)  
Patent pending in Europe (EP17851714)

## Lead Inventors

### James Hyde, PhD

Professor Emeritus  
Department of Biophysics  
Founder  
National Biomedical EPR Center

### Richard Mett, PhD

Adjunct Professor  
Department of Biophysics

### Jason Sidabras, PhD

Assistant Professor  
Department of Biophysics

### Contact

Landon Olp  
414-955-4884  
lolp@mcw.edu