

# Iron PARACEST MRI contrast agents

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## Technology description

Elevated iron levels have been identified in a variety of neurologic disorders, including Parkinson' s, Huntington' s, Alzheimer' s, Friedreich' s ataxia and multiple sclerosis. It has been hypothesized that excess iron may play a role in the progressive deterioration observed in patients suffering from those diseases. Current MRI techniques (e.g. magnetic susceptibility imaging, and T2 and T1 weighted MR images) used to detect excess iron deposits rely on differences of bulk water proton relaxivity. Unfortunately, these techniques suffer from the presence of artifacts, thereby complicating clinical interpretation. More direct imaging methods are needed that would specifically image iron and only iron in tissue. A UB chemist has developed a series of ligands that represent an entirely new class of contrast agents that respond only upon sequestering endogenous iron in cells, making it possible to image Fe(II) and only Fe(II) within a sea of metal ions and other cellular components. These PARACEST-based contrast agents appear to be useful tools for monitoring excess iron levels in tissue and may facilitate the tracking and treatment (e.g. chelating agents, CNS drugs, etc.) of diseases involving aberrant iron levels. Additionally, their development as clinical tools would provide a much-needed alternative to lanthanide contrast agents (e.g. gadolinium), which can be problematic for patients with compromised renal function.

## Institution

[State University of New York](#)

## Inventors

[Janet Morrow](#)

Associate Professor

Chemistry

## 联系我们



叶先生

电话 : 021-65679356

手机 : 13414935137

邮箱 : yeyingsheng@zf-ym.com