

Designer therapeutic and diagnostic tools: From cancer to chemical weapons

Dr Gemma-Louise Davies, School of Chemistry, University of Birmingham, UK

Magnetic resonance imaging (MRI) is a powerful non-invasive technique which becomes considerably more potent when contrast agents (CAs) are introduced. Molecular contrast agents based on Gd-chelates (e.g. Dotarem®) are regularly used in the clinic, however these usually lack specificity for selective disease or biomarker diagnostics, and can also suffer from poor signal-to-noise and blood circulation half-life, which can limit their clinical utility. Carefully designed contrast agents, and contrast agents based on nanomaterials have the potential to overcome these issues. In this talk, I will introduce some of our approaches to the careful design and development of MRI contrast agents where we seek to understand structure-property relationships and then exploit our unique insights to develop diagnostic tools.