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Nota di contenuto	Cover; Title Page; Copyright; Contents; List of Contributors; Preface; Chapter 1 General Principles of MRI; 1.1 Introduction; 1.2 Theoretical basis of NMR; 1.2.1 Short description of NMR; 1.2.2 Relaxation times; 1.2.3 Saturation transfer; 1.2.4 Concept of localization by magnetic field gradients; 1.3 Principles of magnetic resonance imaging; 1.3.1 Spatial encoding; 1.4 MRI pulse sequences; 1.4.1 Definition; 1.4.2 k-Space trajectory; 1.4.3 Basic pulse sequences 1.5 Basic image contrast: Tissue characterization without injection of contrast agents (main contrast of an MRI sequence: Proton density (P), T_1 and T_2, T_2^*)1.5.1 Proton density weighting; 1.5.2 T1 weighting; 1.5.3 T2 weighting; 1.5.4 T2* weighting; 1.6 Main contrast agents; 1.6.1 Gadolinium (Gd) complex agents; 1.6.2 Iron oxide (IO) agents;

1.6.3 CEST agents; 1.7 Examples of specialized MRI pulse sequences for angiography (MRA); 1.7.1 Time of flight angiography: No contrast agent; 1.7.2 Angiography using intravascular contrast agent (Blood pool CA) injection; 1.7.3 DSC DCE MRI
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ReferencesChapter 3 Synthesis and Characterization of Ligands and their Gadolinium(III) Complexes; 3.1 Introduction-general requirements for the ligands and complexes; 3.2 Contrast agents employing linear polyamine scaffold; 3.2.1 Synthesis of linear polyamine backbone; 3.2.2 N-functionalization of linear polyamine scaffold; 3.3 Contrast agents employing cyclen scaffold; 3.3.1 Synthesis of the macrocyclic skeleton; 3.3.2 N-functionalization of macrocyclic scaffold; 3.4 Other types of ligands; 3.4.1 H4TRITA and related ligands; 3.4.2 H3PCTA and related ligands; 3.4.3 TACN derivatives
3.4.4 Ligands with HOPO coordinating arms and related groups3.4.5 H4AAZTA and related ligands; 3.5 Bifunctional ligands and their conjugations; 3.6 Synthesis and characterization of the Ln(III) complexes; 3.6.1 General synthetic remarks; 3.6.2 Characterization of the complexes; List of Abbreviations; References; Chapter 4 Stability and Toxicity of Contrast Agents; 4.1 Introduction; 4.2 Equilibrium calculations
4.2.1 Constants that characterize metal ligand interactions (protonation constants of the ligands, stability constants of the complexes, conditional stability constants, ligand selectivity, and concentration of free Gd^3+: pM)

Sommario/riassunto

"The second edition of The Chemistry of Contrast Agents in Medical Magnetic Resonance Imaging is a comprehensive treaty covering all aspects of production, use, operating mechanism and theory of these diagnostic agents used to produce high contrast images in MRI.It has been completed to now include recent developments on "classical" Gd-based and iron-oxide probes and chapters dedicated to the most significant advances in molecular imaging probes. Chemical Exchange Saturation Transfer is discussed, which is a novel means of generating MRI contrast"--