Real-time molecular imaging …

... Recent developments in NMR hyperpolarization methods allow for preparation of pure exogenous contrast agents with nuclear spin polarization increased by approximately 4–5 orders of magnitude compared to equilibrium nuclear spin polarization achieved in clinical practice at 3 T. Many hyperpolarized contrast agents are now being validated for utility in ultrafast (on a timescale of seconds) molecular imaging of metabolic and functional abnormalities associated with cancer, lung disease, heart disease, and other diseases. While most work is currently conducted in animal models of human diseases, a few hyperpolarized contrast agents are already being tested in human volunteers. In their Concept article on page 3156 ff., E.Y. Chekmenev et al. focus on selected methods of NMR hyperpolarization with potential of clinical translation, describing the fundamentals of physical chemistry behind them.