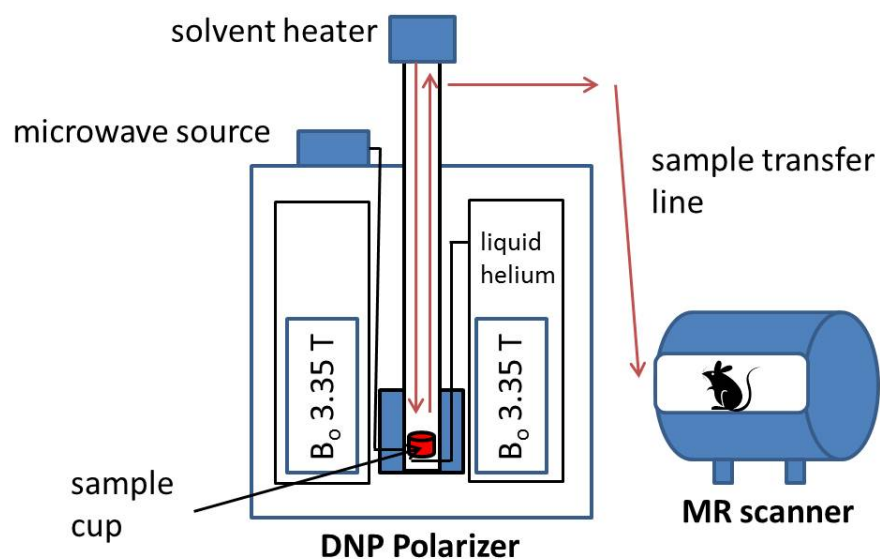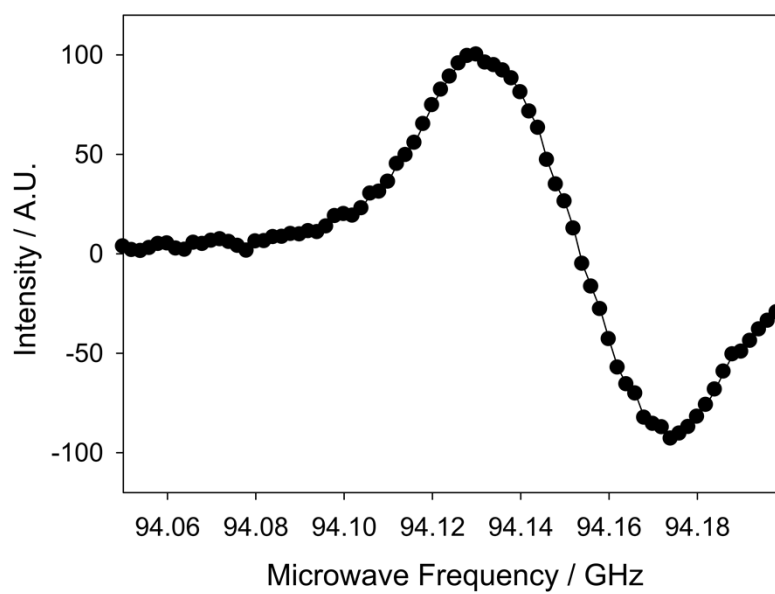Supporting Information for "Chemical Reaction-Induced Multi-molecular Polarization (CRIMP) of Magnetic Resonance Imaging Agents."

Youngbok Lee, Niki M. Zacharias Millward, David Piwnica-Worms, and Pratip K. Bhattacharya
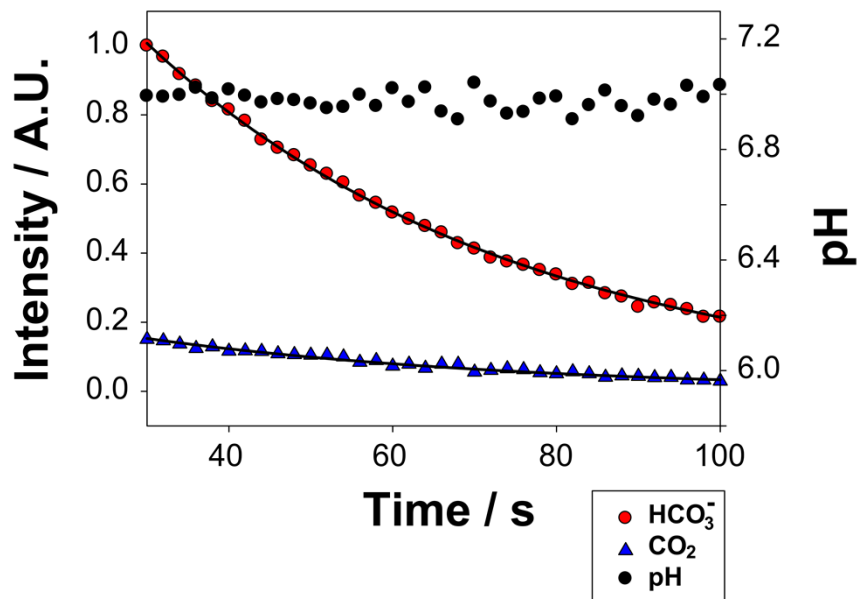
Supplementary Figures

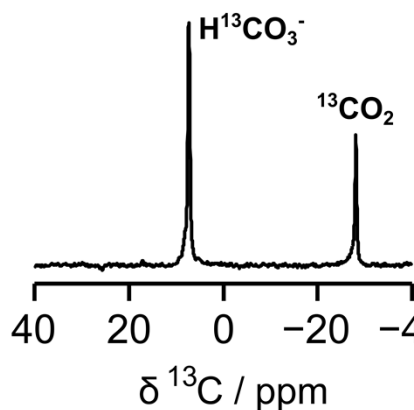**Figure S1:** Schematic diagram of the dissolution DNP-MR setup.

Figure S2: Microwave frequency dependence of nuclear spin polarization levels of 1,2-$^{13}C_2$-pyruvic acid for the OX063 radical.

Figure S3: Fit of the signal intensities of hyperpolarized $H^{13}CO_3^-$ (red circle) and $^{13}CO_2$ (blue triangle) with single exponential fit function. The pH value (black circle) was calculated employing Henderson-Hasselbalch equation at a given time point. pH values were determined using a calibrated AB15 Accumet Fischer Scientific pH meter with a micro pH electrode (13-620-95).
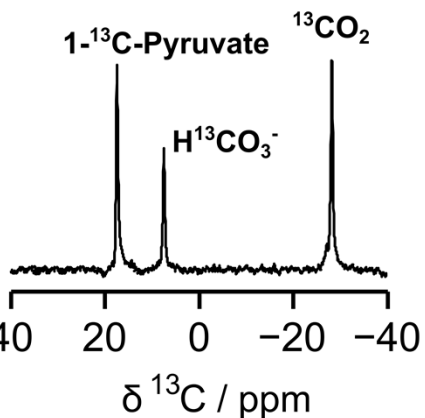
Figure S4: Intensity ratio between hyperpolarized $H^{13}CO_3^-$ and $^{13}CO_2$ resonances at two different pH values. pH values were determined using a calibrated AB15 Accumet Fischer Scientific pH meter with a micro pH electrode (13-620-95).