Abstract Submitted
for the NWS12 Meeting of
The American Physical Society

Combined Fat Imaging/Look Locker for mapping of lipid spin-lattice (T1) relaxation time[1] ANNIE JIHYUN PARK, ANDREW YUNG, PIOTR KOZLOWSKI, STEFAN REINSBERG, University of British Columbia — Tumor hypoxia is a main problem arising in the treatment of cancer due to its resistance to cytotoxic therapy such as radiation and chemotherapy, and selection for more aggressive tumor phenotypes. Attempts to improve and quantify tumor oxygenation are in development and tools to assess the success of such schemes are required. Monitoring oxygen level with MRI using T1 based method (where oxygen acts as T1 shortening agent) is a dynamic and noninvasive way to study tumor characteristics. The method's sensitivity to oxygen is higher in lipids than in water due to higher oxygen solubility in lipid. Our study aims to develop a time-efficient method to spatially map T1 of fat inside the tumor. We are combining two techniques: Fat/Water imaging and Look Locker (a rapid T1 measurement technique). Fat/Water Imaging is done with either Dixon or Direct Phase Encoding (DPE) method. The combination of these techniques poses new challenges that are tackled using spin dynamics simulations as well as experiments in vitro and in vivo.

[1]Natural Sciences and Engineering Research Council (NSERC), Canadian Cancer Society

Annie Jihyun Park
University of British Columbia

Date submitted: 18 Sep 2012 Electronic form version 1.4