INTRODUCING OXYGEN-17 LABELS ONTO L-THREONINE SIDECHAIN. **Yuying Huang** and Gang Wu. Department of Chemistry, Queen's University, 90 Bader Lane, Kingston, Ontario, Canada K7L 3N6. (17yh99@queensu.ca)

Nuclear magnetic resonance (NMR) is a powerful spectroscopic tool that permits chemists to obtain detailed information about molecular structures. The most commonly used NMR-active nuclei are ^{1}H, ^{13}C, ^{15}N, and ^{31}P, all of which have $I = 1/2$. While the presence of oxygen element in many organic and biological molecules makes it a potential NMR target, the only NMR-active oxygen isotope, ^{17}O, is not only quadrupolar ($I = 5/2$), but has a very low natural abundance (0.037%). Both of these factors make ^{17}O NMR studies challenging [1]. The first step in many ^{17}O NMR studies is to introduce the ^{17}O isotope into the targeted functional group in the molecule of interest (i.e., ^{17}O-isotope labeling). It is well established that ^{17}O-isotope labeling of the carboxylate group in amino acids can be readily achieved [1]. However, ^{17}O-isotope labeling of the hydroxyl group in amino acid sidechains such as L-serine and L-threonine has remained a challenge. The sidechain hydroxyl group in proteins is known to play indispensable roles in many cellular processes. In this presentation, we report a convenient synthesis of [[3-^{17}O]-L-threonine where the sidechain hydroxyl groups are ^{17}O-labeled.

[1] G. Wu, Prog. Nucl. Mag. Reson. Spectrosc. 52, 118-169 (2008).