

PROBING HYDROGEN BONDING INTERACTIONS BY SOLID-STATE ^{17}O NMR. **Gang Wu**. Department of Chemistry, Queen's University, 90 Bader Lane, Kingston, ON K7L 3N6, Canada. (wugang@queensu.ca)

Hydrogen bonding is one of the most important driving forces in many chemical and biological processes [1]. While spectroscopic and structural characteristics of hydrogen bond formation in molecular systems have been well documented in the literature, new information continues to emerge whenever a new analytical probe is employed. Because oxygen is ubiquitous in hydrogen bonds, ^{17}O ($I = 5/2$, natural abundance 0.037%) NMR was to be a particularly sensitive probe for studying hydrogen bonding interactions even in the early days of NMR [2-4]. However, progress has been rather slow over the past several decades due to technical difficulties in detecting ^{17}O NMR signals. In recent years, we have used solid-state ^{17}O NMR to probe hydrogen bonding interactions in many cases [5,6]. In this talk, we will show several examples where solid-state ^{17}O NMR is used to provide several important aspects of hydrogen bonding interactions.

- [1] G. A. Jeffery, *Introduction to Hydrogen Bonding*, Oxford University Press, New York, 1997.
- [2] J. Reuben, A. Tzalmuna, and D. Samuel, *Proc. Chem. Soc.* (1962) 353.
- [3] A. E. Florin and M. Alei, *J. Chem. Phys.* 47 (1967) 4268.
- [4] J. Reuben, *J. Am. Chem. Soc.* 91 (1969) 5725.
- [5] G. Wu, *Prog. Nucl. Magn. Reson. Spectrosc.* 114/115 (2019) 135.
- [6] J. Palmer and G. Wu, *Annu. Rep. NMR Spectrosc.* 103 (2021) 1.