Abstract Submitted
for the OSF12 Meeting of
The American Physical Society

**A Raman Scattering Study of the Interactions of DNA with its Water of Hydration** SCOTT LEE, University of Toledo, NONG-JIAN TAO, Arizona State University, ALLAN RUPPRECHT, University of Stockholm — Raman spectroscopy is used to probe the nature of the hydrogen bonds which hold the water of hydration to DNA. The $\sim$ 3450 $cm^{-1}$ molecular O-H stretching mode shows that the first 6 water molecules per base pair of the primary hydration shell are very strongly bound to the DNA. The observed shift in the peak position of this mode permits a determination of the length of the hydrogen bonds for these water molecules. These hydrogen bonds appear to be about 0.3 Å shorter than the hydrogen bonds in bulk water. The linewidth of this mode shows no significant changes above water contents of about 15 water molecules per base pair. This technique of using a vibrational spectroscopy to obtain structural information about the hydration shells of DNA could be used to study the hydration shells of other biomolecules.

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Date submitted: 31 Aug 2012 Electronic form version 1.4