

# The Structure of Water on HCl Solutions studied with Sum Frequency Generation

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The influence of dissolved HCl on the surface of water has been investigated with sum frequency generation (SFG) spectroscopy. Ions in solution cause water on the surface to be oriented relative to pure water, with hydrogen atoms directed toward the bulk solution. There is no signal due to molecular HCl suggesting that oriented water molecules, not molecular HCl, dominate the surface. A model is proposed to account for the reported SFG results as well as surface tension and surface potential measurements. The result suggests that application of the Gibbs equation to determine surface excess may need to be reevaluated.