How Do We Know What Students Know?  
The Development and Evaluation of a Concept Inventory

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As chemists, we strive to produce quality data about chemical systems. This data allows us to support our claims regarding the reactions or the compounds we study. As chemistry educators we need to be equally cognizant of the quality of the data we collect when making educational measurements. Educational data can suffer from a variety of threats to its validity and reliability, thereby lowering our ability to support claims about student learning. Obtaining quality data begins during the development phases of an educational instrument and continues throughout the lifetime of an instrument. Both qualitative and quantitative investigations can be used to provide evidence in support of the validity and reliability claims of instrument-based educational data. In this seminar, I will discuss some of the methods used in several of my group’s research projects on educational measurement and how data from these methods is used to support how we know what students know. Details will be presented from qualitative and quantitative studies from the development and analysis of the Thermochemistry Concept Inventory.

Open Forum: 4:15 p.m. to 5 p.m. Tuesday, Oct. 16, 193 Kolthoff Hall  
“Student Engagement in the Classroom”