

## ***Measuring Student Understanding of Multiple Representations in Chemistry***

*Stacey Lowery Bretz*

*Miami University*

USA

Learning chemistry requires students to not only interpret information encoded in symbolic and particulate representations, but also to connect multiple representations of chemical phenomena. Failure to accurately interpret and connect such representations is one source of students' alternative conceptions. Our research group has designed a suite of measurement tools to advance our understanding of how students interpret representations for a variety of core concepts. Findings regarding alternative conceptions will be presented. Creating such measures has also presented multiple challenges with regard to establishing the reliability and validity (precision and accuracy) of the data. Emerging insights regarding the underlying assumptions and appropriateness of commonly used psychometrics will be discussed as well.