

Summer Modeling Institute in Chemistry



July 15th-26th
Monday-Friday 8:30-3:00

Birmingham-Southern College



Workshop Directors: Mrs. Emily Menard emenard@uab.edu
Dr. Michelle Houston mhouston@bcsk12.org

Chemistry

Dr. Rachel Ward and Mrs. Karen Ladd will take participants through several “modeling cycles” in hands-on/minds-on experiences dealing with various chemistry topics. The Modeling approach to chemistry is based on the particulate nature of matter, asking three fundamental questions about matter:

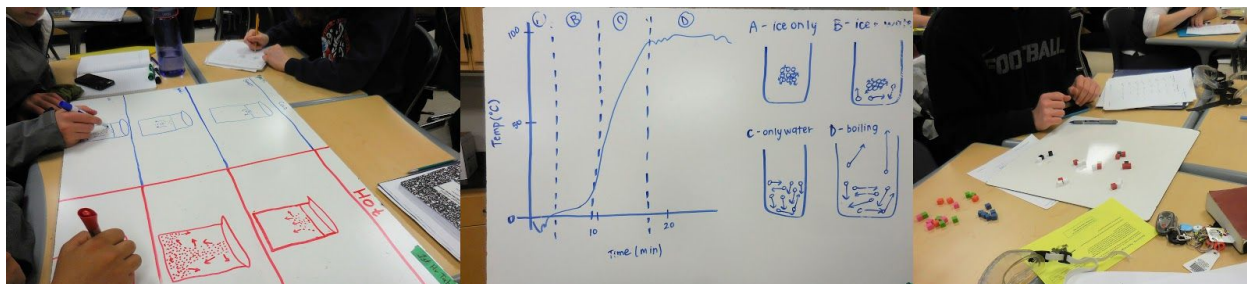
1. How do we view matter?
2. How does it behave?
3. What is the role of energy in the changes we observe?

Working closely with colleagues, participants will practice teaching students to design experiments, reason from data and to develop, modify and deploy scientific models. Emphasis will be placed on the first nine units: from “the simple particle” through “relating how much to how many particles” (i.e. stoichiometry).

Modeling Instruction™

Modeling Instruction™ helps teachers attain knowledge, skills and experience needed to benefit students and is the only high school science program recognized as *Exemplary* by the U.S. Department of Education. Modeling Instruction™ corrects many weaknesses of the traditional lecture/demonstration method, including fragmentation of knowledge, student passivity and persistence of naive beliefs about the physical world. Unlike the traditional approach, in which students passively accept an endless stream of seemingly unrelated topics, Modeling Instruction™ applies structured-inquiry techniques around a small number of scientific models, thus making the course coherent. Students learn science as scientists do – by *doing* science. When modeling, students:

- are encouraged to think scientifically by experimenting, collecting and analyzing data, communicating findings & drawing conclusions
- use the basic skills and practices of mathematical modeling, proportional reasoning, quantitative estimation and technology-enabled data collection
- use, test and validate student-created mental models
- evaluate and discard incorrect naive concepts
- demonstrate improved reasoning as measured on numerous standardized assessments.



The National Science Foundation, Department of Education and independent studies support the assertion that Modeling Instruction™ raises the level of the science learned. More information on Modeling Instruction™ is available at: <http://modelinginstruction.org/>

Workshop Leader Rachel Ward

Rachel Ward has a Ph.D. in Chemistry and has taught at the college and high school level. She is currently teaching Chemistry and AP Chemistry at Saint Stephen's Episcopal School in Florida. She has led several Modeling Chemistry workshops over the past few years.

Workshop Co-Leader Karen Ladd

Karen Ladd is a recently retired science teacher from Arkansas. She spent 40 years in the classroom using Modeling Instruction in both Physics and Chemistry for the past 15 years. She has co-led Modeling Physics workshops and attended the Leadership Training in NYC in 2016. She currently works as an AP Science consultant in Arkansas.

Registration

- Register at <https://www.eweblife.com/prm/AMTA/calendar/event?event=2030>
- Registration fee is \$750 for 2 weeks on a first-come basis
- Includes all curriculum materials with copying privileges
- 60 hours of professional development
- Network of local chemistry teachers with whom to collaborate.
- Enrollment is limited.
- Registration deadline is May 18th.

Graduate Credit

Up to 4 hours of graduate credit from Dominican University can be obtained upon the completion of the workshop at \$100/credit hour. If you are interested in getting graduate credit you need to sign up with Dominican University prior to the workshop starting.

Housing

Dorm rooms are available at \$50/night single occupancy and \$26/night double occupancy at the nearby University of Alabama at Birmingham.

Funding

Funding resources are at <http://modeling.asu.edu/Projects-Resources.html>; scroll down to "Grants for Instructional Technology, Improved Instruction, Modeling Workshops"

Pictures from Birmingham-Southern College and 2017 Summer Modeling Institute