

News Release

Research Projects keep Red Lake Falls, Minn., Senior Emmett LaCoursiere Engaged in Chemical Computation this Summer

By Itollefs on Wednesday, July 9, 2014

In a quiet corner of a lab University of Minnesota Crookston Senior Emmett LaCoursiere sits engrossed in chemical computation. LaCoursiere finds the work is both engaging and beneficial. The animal science major from Red Lake Falls, Minn., is working with Assistant Professor Tim Dudley modeling small molecules that mimic biological behavior. For LaCoursiere, the research has implications in the field of animal science as it relates to pharmaceutical use in the medical treatment of animals.

Benzimidazole is the name of the chemical LaCoursiere and fellow student Michael Laurich are investigating. With Dudley guiding, the two are responsible for all the calculations, and using both math and physics, the team attempts to predict chemical behaviors when the molecule is altered.

"This multifaceted research began when I was working at Villanova University several years ago, and these two students are coming up with the data that eventually will be tested in the lab at Villanova," Dudley explains.

The software modeling on the computer could lead to other opportunities. The work, funded by a University of Minnesota Grant-In-Aid, could take the students away from computer modeling to hands-on experience in the lab as well.

The research project is one of two that Dudley is leading. The other is related to the petroleum industry and the conversion of light petroleum, like propane, methane, or others, into more useful substances. For example, the molecules can be modified by the addition of oxygen, which turns the gas into a liquid. This simple oxidation process could make these species more useful.

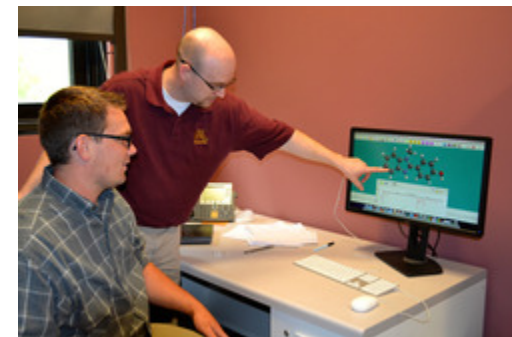
"The field of modeling is relatively new, and as we learn more, we are using what we do know about modeling a molecule to predict what we do not know," Dudley says. "It is a method that has the potential to save time in the lab."

Dudley likes conducting research with undergraduates. "Research teaches students about chemistry and while they are discovering things I may already know, together we are learning making it a two-way street as we work through and experience the process together."

Students interested in undergraduate research must have about a year and a half of chemistry to have enough understanding to get involved in a research project. "For students it is a great opportunity and it is one of the main reasons I enjoy teaching undergraduates," Dudley says.

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In the photo: Emmett LaCoursiere (left) and Assistant Professor Tim Dudley (right) work on chemical computations and modeling of small molecules that mimic biological behavior.



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