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New NMR spectrometer boosts research capacity

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New NMR spectrometer boosts research capacity

The recent addition of a Nuclear Magnetic Resonance (NMR) spectrometer has greatly enhanced the instructional and research capacity of both faculty and students in Dominican's Chemistry and Biochemistry program.

The 400 MHz spectrometer is the only research-grade NMR in Marin County. Its addition to Dominican's [\\$20 million Science Center](#) will allow faculty and students in the [Chemistry and Biochemistry program](#) to expand research examining the physical and chemical properties of atoms and the molecules in which they are contained. Researchers will use the NMR to quantify the hydrogen, carbon, and other atoms present in a given molecule and gain detailed information about the structure, dynamics, and chemical environment of molecules being studied.

The NMR is being incorporated into several upper division courses in the [Department of Natural Sciences and Mathematics](#) in the [School of Health and Natural Sciences](#).

"The NMR will give faculty and student researchers deeper detailed analysis of chemical structures," said Maggie Louie, Director of the Chemistry and Biochemistry program at Dominican.

"Students in our Research Methodology course, for example, will gain greater insight into their work, because when the students synthesize a compound, they will be able to see every step of the synthesis," Louie added. "Students will be able to run a sample any time and do analysis throughout the experiment. They will be able to confirm whether a chemical reaction took place and if there were any impurities in the products," said Graciela Carranza, assistant professor of chemistry.

Previously, faculty and student researchers had to travel off campus to work at NMRs located outside Marin. This limited the ability to conduct timely analysis throughout the experiments.

"Now our faculty can teach students what an NMR is, how to operate it, how to prepare samples for analysis, and how to analyze the data. This is an important addition to our growing program," Louie said.

"Not only will students gain hands-on training and experience using the instrument, but the NMR will also help pave the way for future American Chemical Society (ACS) accreditation of Dominican's chemistry program," Carranza said.

The NMR was donated to Dominican by Intermune, Inc., a small pharmaceutical company recently acquired by Roche, with the assistance of alumnus Chad Schwieter '97 and Mario Cortes, a former NMR engineer at Agilent Technologies.

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