S&T graduate student's work featured on cover of international chemistry journal

Posted by Peter Ehrhard
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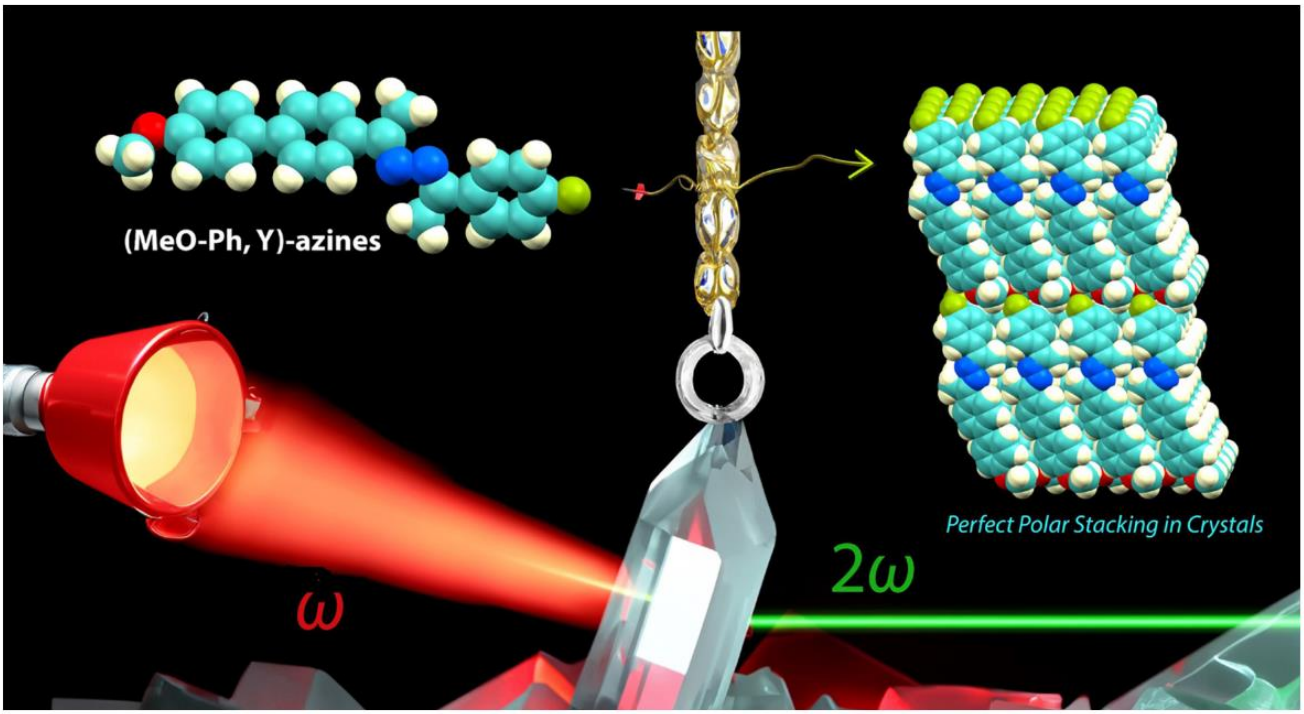

Part of the journal cover that features Harmeet Bhoday's research.

A chemistry research team from Missouri S&T recently had its work featured on the cover of "Chemistry – A European Journal."

Harmeet Bhoday, a Missouri S&T Ph.D. student in chemistry from Chandigarh, India, was the lead author of an article titled "Perfect Polar Alignment of Parallel Beloamphiphile Layers: Improved Structural Design Bias Realized in Ferroelectric Crystals of the Novel "Methoxyphenyl Series of Acetophenone Azines." Journal editors selected the article as a cover feature and a separate profile. The research was also featured in "Hot Topic: Crystal Engineering."

Bhoday wrote the article with Dr. Nathan Knotts, a graduate of the University of Missouri, and Dr. Rainer Glaser, professor of chemistry at S&T.


Harmeet Bhoday


Nathan Knotts


Rainer Glaser

Joe Miner

> Photos of the authors submitted to the profile section of *Chemistry, a European Journal*.

"The focal point of our research has been the design of polar crystalline solids of pure molecular materials for nonlinear optics," says Bhoday. "Rather than merely seeking these crystals, we wanted to design organics and dipeptides that would want to crystallize with supramolecular architectures."

The team first tried to design molecules that would encourage strong lateral attractive interactions between side-by-side molecules, but then discovered that they could go further and deliberately discourage the dipole antiparallel-alignment of polar materials for better performance. The research group has described the successful synthesis of four representatives of a new "methoxyphenyl series" of acetophenone azines.

"This study resulted in exciting insights about intra- and interlayer interactions," says Bhoday. "The interplay between intralayer and interlayer intermolecular interactions is challenging, and finding the right balance is permanently on our mind and the subject of extensive computational theorizing."

Bhoday says that thanks to the research, for the first time, it is now possible to establish experimental structure-function relations for the nonlinear optics activity of ferroelectric molecular crystals.

About Missouri S&T

Missouri University of Science and Technology (Missouri S&T) is a STEM-focused research university of over 7,000 students located in Rolla, Missouri. Part of the four-campus University of Missouri System, Missouri S&T offers over 100 degrees in 40 areas of study and is among the nation's top public universities for salary impact, according to the *Wall Street Journal*. For more information about Missouri S&T, visit www.mst.edu.