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meet a member

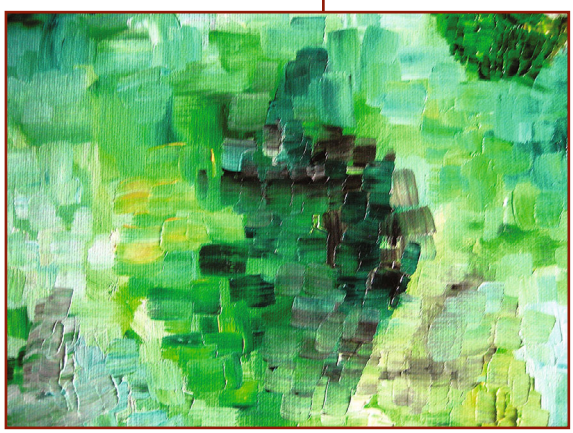
Science Inspires Art for Wenjun Cai

Lynne Robinson

Wenjun Cai surrounded by her oil paintings based on her observations of the sea. "I became fascinated with ocean waves after moving to Tampa," she said. "I am particularly interested in looking at how water reflects light."

With bursts of rich color and complex, layered surfaces, Wenjun Cai charts her course of boundless creative exploration in the space created at the juncture of artistic expression and scientific discovery.

An assistant professor in the Mechanical Engineering Department at the University of South Florida, Cai uses oil painting as a lens to examine the aesthetic possibilities of her research into textures of metals. "The term 'texture' in metallurgy means 'preferred orientations,' as opposed to random distribution, of crystals. I transferred the concept to create paintings with mosaic looks, where colors with a slightly different hue and tone are connected in different ways in space," Cai explained. "These paintings can be viewed at different length scales and directions."



Apple was inspired by the textures in metallurgy that Cai has encountered in her scientific research. At her laboratory at the University of South Florida, Cai is developing a new processing strategy for energy-efficient alloys and coatings, while also studying electrodeposition of multilayered and graded lightweight metals, as well as tribological and tribocorrosion properties of metals in extreme conditions.

"Art and science may seem like totally different areas of interest to a lot of people," she continued. "Art allows us to imagine. Science helps us to reason. And, when these two meet, they inspire and improve each other."

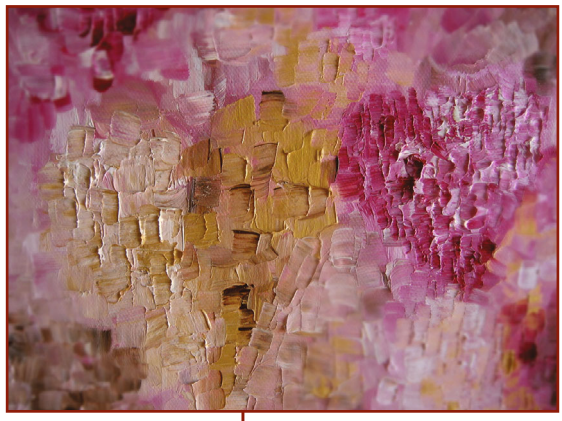
Cai has been developing her oil painting skills for about nine years, learning many basic techniques from tutorials posted on YouTube. "I have found that a good video can really help beginners get started," she said, noting that she plans to share her knowledge someday with an instructional YouTube video of her own. Before she started experimenting with oils, Cai had worked primarily with watercolors. "I love both forms, but I found that watercolor was difficult to master," she said. "It is very hard to correct mistakes with watercolor since most colors appear very sheer and transparent on paper. On the other hand, I feel that oil painting is more versatile. You get the whole spectrum of colors, and they can be easily built up with a brush, sponge, spatula, or even your fingers. It is just more fun to me."

A preferred Saturday afternoon for Cai is mixing vivid colors to create intricate, layered structures on primed canvas. Because she paints for her own enjoyment, she tends to take her time in creating her pieces. "I don't like to repeat myself, so I often wait until I get inspiration to do a new work, rather than repeating a theme," she said. "Once I get started, the majority of the painting could be finished in a couple of hours. But, I tend to come back to a piece to make modifications until I am completely satisfied. That process can take a few months."

Art and friendship are closely intertwined for Cai, with a major point of pride being that she has frequently

been asked for her paintings as gifts. She also warmly recalls the support for her artistic pursuits that she received during an exhibition of her work at a local artist co-op while she was in graduate school at the University of Illinois, Urbana-Champaign. "A member of my thesis committee and his friends played lovely string music during the exhibition, and all my friends were able to be there," she said.

However, it's the personal challenge of interpreting her scientific observations, both in the laboratory and in the world around her, into singular works of art that keeps Cai coming back to her easel on Saturday afternoons. "Oil painting is an adventure for me," she said. "It opens up opportunities for my imagination to try fun ideas with no constraints."



In *In Love*, Cai experimented with both color and texture "to give this painting a romantic feeling."

member news

Brajendra Mishra Joins WPI

Brajendra Mishra is the new Kenneth G. Merriam Professor of Mechanical Engineering and associate director of the Metal Processing Institute at Worcester Polytechnic Institute (WPI), Massachusetts. A professor at the Colorado School of Mines (CSM) since 1997, Mishra was also the CSM site director of the Center for Resource Recovery and Recycling, a National Science Foundation-supported, multi-university research collaborative headquartered at WPI. He was the 2006 TMS President and served as president of the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME) in 2011.

Brajendra Mishra

Keith Bowman Named Dean

San Francisco State University has appointed Keith J. Bowman as the next dean of its College of Science and Engineering. Bowman is leaving the Illinois Institute of Technology (IIT) where he most recently served as chair of the Mechanical, Materials and Aerospace Engineering Department. During his tenure at IIT, he oversaw the implementation of new curricula and the development of new strategic directions, with his department experiencing a 40 percent increase in full-time undergraduate enrollment and graduate credit hours. He has also been deeply involved in efforts to increase the engagement of women and underrepresented minorities in science and engineering fields, including serving as an advisory organizer to Diversity in the Minerals, Metals, and Materials Professions (DMMM1), a summit organized by TMS in July 2014.

Keith Bowman

Pradeep Rohatgi Inducted as NAI Fellow

Pradeep Rohatgi, Distinguished Professor of Materials Engineering at the University of Wisconsin-Milwaukee (UWM) and Director of the UWM Centers for Composites and Advanced Materials Manufacture, was inducted as a 2014 Fellow into the National Academy of Inventors (NAI) on March 20. Rohatgi is also a 2012 TMS Fellow, among his many other awards and honors.

Pradeep Rohatgi

In Memoriam: James E. Hoffmann

TMS extends its condolences to the family, friends, and colleagues of James E. Hoffmann, who passed away on February 10. A TMS member since 1973, Hoffman shared his knowledge of extractive metallurgy throughout his long career as a *JOM* advisor and active technical committee member. He was employed in extractive metallurgical research by both the AMAX Corporation and Exxon Minerals Corporation for a total of 29 years. Since 1983, he provided consulting services to the extractive metallurgical industry.