

A super tiny giraffe (w/ Video)

May 30 2012

Shaahin Amini was ready to quit. The Ph.D. student at the University of California, Riverside's Bourns College of Engineering had spent three hours looking into a microscope scanning a maze of black-and-white crosshatched lines, tubes and beads made of nickel, aluminum and carbon magnified 3,800 times.

Then he saw it. It looked like some kind of animal. He zoomed in further. It now looked like the road runner from the Bugs Bunny cartoons. He rotated it. Bingo! A sheep? No, a [giraffe](#). A 0.05 millimeter giraffe.

He spent a few hours using Photoshop to add brown for the [skin patches](#), red for the tongue and green in the background to resemble a jungle. It was done.

He submitted the piece to the Science as Art competition at 2012 MRS (Materials Research Society) Spring Meeting in San Francisco. Amini's piece, which was one of about 150 entries, was selected by the chairs of the meeting as one of the 50 finalists from throughout the world to be displayed in the exhibition hall. Meeting attendees voted on the winners and selected Amini's piece as one of the first-place winners.

"Exploration under the microscope will give you the chance to detach yourself from this world and momentarily live in a microscopic wonderland where beauty can be found in unexpected spots." Amini said. "At the meeting I saw attendees taking pictures of the giraffe and laughing at it. I was glad that people found it quite fascinating."

Amini is a fourth-year Ph.D. student working with Reza Abbaschian, dean of the Bourns College of Engineering and William R. Johnson, Jr. Family Professor of Engineering.

"Shaahin is a very talented and hard-working student," Abbaschian said. "I'm very proud of him for receiving this well-deserved honor."

Amini's research area is the [nucleation](#) and growth kinetics of graphene layers from molten metals. Graphene is a single-atom thick carbon crystal with unique properties, including superior electrical and heat conductivities, [mechanical strength](#) and unique optical absorption, which could have widespread use in electronics. Amini, for the first time, developed a novel processing technique to grow single layer graphene from a molten phase.

The feature that Amini turned into a giraffe was created during the melting process of nickel, aluminum and carbon mixture. As the molten alloy solidified, the nickel and aluminum formed the body of the giraffe while the carbon was rejected and crystallized as a graphite cover. After further cooling, the graphitic cover wrinkled, due to less contraction than the metallic substrate, created a network of creases resembling the familiar skin patches of a giraffe.

Provided by University of California - Riverside

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