

JEOL 2017 Image Contest

March Winner: Nano Nemo on the Water - Armin VahidMohammadi and Majid Beidaghi, Auburn University

Subject: Nano-sized layers of Ti₂C particles representing the imaginary Nemo character in Pixar's "Finding Nemo" animation. The image depicts an illusion of Nemo's reflection in the water. Ti₂C is synthesized by selective etching of Al atoms from Ti₂AlC MAX phase and is a promising electrode material for energy storage devices such as supercapacitors and batteries.

Method: The SEM image was taken using JEOL JSM-7000F Scanning Electron Microscope and was colored and visualized using a computer software.

April Winner: Smiley Face Emoji - Kenneth Dunner, Jr, Microscopist at UT MD Anderson Cancer Center.

Research investigator - Bernard Ayanga

Subject: mouse kidney glomerulus

Method: LX-112 resin embedded mouse kidney tissue imaged with JEOL JEM-1010 TEM

Image Contest Details

[All entries](#) can be seen on our website. To [enter the contest](#) and submit your own images, check out the contest guidelines. We look forward to seeing your great results with the JEOL SEM, TEM, or EPMA! Each winning image for the month is reproduced in our annual [microscopy image calendar](#).

What makes a great image and how does JEOL choose the winner each month?

A winning image requires the following attributes:

1. Artistically or esthetically pleasing to look at (eye catching).
2. Good composition, not unlike any piece of artwork (layout, brightness contrast, color...).
3. Technically sound with no charging, sharp focus, no astigmatism and the correct detector and accelerating voltage (usually the lower the better).
4. Careful and competent use of image processing and colorization.

New Cryo-EM for Single Particle Analysis and Electron Tomography

Cryo-EM has become increasingly important as an atomic-scale structural analysis method as evidenced by the large number of structures around 3Å in the EM databank. Cryo-EM not only aims at solving atomic structures in basic science, but recently has also been utilized in pharmacological settings for drug discovery. To meet this growing demand, JEOL has developed a new cryo-EM "CRYO ARM™ 200", which automatically acquires image



data for Single Particle Analysis or Electron Tomography over long periods of time. [Learn More>>>](#)

In the Lab: Soft X-ray Emission Spectrometer (SXES)

Members of JEOL USA's applications team had the opportunity to work extensively with the [Soft X-ray Emission Spectrometer](#) (a unique WDS for SEM and EPMA) and applications experts from our factory last month. The SXES was installed in our JSM-7800F Prime ultra-high resolution analytical FE SEM in the Peabody, MA demo lab. The FE SEM equipped with SXES was shipped soon afterwards to a customer's lab after we gathered applications data and demonstrated it to several potential customers. The SXES has remarkable trace element sensitivity and high spectral resolution (0.3eV) for chemical state mapping and chemical state analysis.

From left to right are: Pete McSwiggen, Dave Videchak, Jennifer Misuraca, Regina Campbell, M. Shibata, Vern Robertson, Y. Izuchi, and M. Takakura (SXES applications scientist, JEOL Ltd.).

Meet the New IT500 SEM

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The latest innovations for our InTouchScope™ series SEMs are designed to make SEM even more accessible to everyone. Seamless navigation across the sample allows you to quickly go from an optical image to high resolution SEM imaging and analysis. Choose a platform that is right for you. We offer high vacuum and low vacuum models with or without our embedded EDS system. [Learn more>>>](#)

Recent Publications and Microscopy News

Researchers at Michigan State have successfully imaged one of the world's largest viruses. "If the common cold virus is scaled to the size of a ladder, then the giant Samba virus is bigger than the Washington Monument," lead researcher Kristin Parent, assistant professor of biochemistry and molecular biology at Michigan State, explained. "Cryo-EM allowed us to map this virus' structure and observe the proteins it uses to enter, or attack, cells." [More>>>](#)



Researchers at University of Texas at Dallas (Moon Kim Lab) witnessed atoms rearrange into an interesting pattern - possibly the world's smallest American flag. The team was observing a new material at atomic resolution with the JEOL Transmission Electron Microscope when they increased the temperature of the sample to observe the phase transition. The surprising result was a whole new phase of "stars and stripes." Kim's team is pushing to create the world's smallest transistor, and the nanowires are smaller than 1 nanometer in diameter. The paper was published March 10 in Advanced Materials. [More>>>](#)

Correlative Fluorescence and Electron Microscopy in 3D—Scanning Electron Microscope Perspective. Center for Biologic Imaging, University of Pittsburgh with co-authors from JEOL.
Current Protocols in Cytometry 12.45.1–12.45.15, April 2017
[Preview the data here.](#)



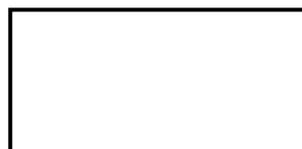
Researchers at Northwestern shared the news that they coauthored a paper with UIC recently published in Nature. The paper reports an **electron cryo-microscopy structure** of ArfA and RF2 in complex with the 70S ribosome bound to a nonstop mRNA. [More>>>](#)



Crafting a vaccine against RSV (respiratory syncytial virus) has been a minefield for 50 years, but scientists at Emory University School of Medicine and Children's Healthcare of Atlanta believe they have found the right balance. A **3D rendering of a live-attenuated RSV particle, captured in a near-to-native state by cryo-electron tomography.** [More>>>](#)



At Emory University School of Medicine, Prof. Elizabeth Wright and her colleagues have refined **techniques for studying viruses in the context of the cells they infect**, allowing them to see in detail how viruses enter and are assembled in cells, or how genetic modifications alter viral structures or processing. [More>>>](#)



Photographic prints of platinum metal on paper (1890-1920s) are [examined in this article](#) (or published in *Microscopy & Microanalysis* and authored by Patrick Ravines (SUNY Buffalo), Natasha Erdman (JEOL), and Rob McElroy (Archive Studio).



JEOL Introduces World's Fastest Direct Write E-Beam Tool

50 Years of E-Beam Expertise and Support

Since 1967, JEOL has been the industry leader in Electron Beam Lithography design and manufacturing. Now the

company enters its 51st year in this field with the introduction of a [new high throughput spot beam direct write system, the JBX-8100FS.](#)

This new generation of e-beam introduces the capability of writing ultrafine patterns at a high rate of speed directly onto substrates with minimum idle time during the exposure process. Maximum scanning speed has been increased to 125 MHz (the world's highest level) for high speed writing applications. We'll be at EIPBN in Orlando at the end of the month, and at Semicon West in San Francisco this July to showcase this exciting new system.

Highlights of Upcoming Events

See our full calendar of events [here](#).



Semicon West

July 11-15, 2017 | San Francisco, CA

We will be demonstrating the IT100 Scanning Electron Microscope and the InfiTOF Mass Spectrometer for monitoring trace impurities in semiconductor process gases, and introducing our new E-Beam Lithography tool. See us in booth #7111.

Cathodoluminescence EPMA Workshop on xCLent

Saturday, August 5, 2017 | Washington University | St. Louis, MO

Join us for this special event prior to M&M.

[For details, click here>>>](#)

M&M 2017

August 7-10, 2017 | St. Louis, MO

Meet us in St. Louis in booth #708 where you'll see the game-changing new microscopes we are introducing this year!

Past Events

[Advances in Sample Preparation, Electron Microscopy, and Analysis - ASM Headquarters, Ohio - May 3, 2017](#)

Stay in touch with us at JEOL USA and share in the fun and some valuable information. Besides, we like to see you there!



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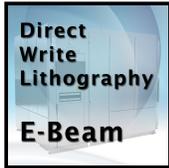
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