

## Video Article

# JoVE Monthly Highlights: October 2017 - Traps for Emerald Ash Borers, Owner/Pet Relationships, Flexural Behavior of Biological Structures, and Study of Nanoparticle Self-Assembly

Anthony Iannazzi<sup>1</sup>, Dipesh Navani<sup>1</sup>

<sup>1</sup>JoVE Content Production

Correspondence to: Dipesh Navani at [dipesh.navani@jove.com](mailto:dipesh.navani@jove.com)

URL: <https://www.jove.com/video/5882>

DOI: [doi:10.3791/5882](https://doi.org/10.3791/5882)

Keywords: This Month in JoVE, Issue 128,

Date Published: 10/4/2017

Citation: Iannazzi, A., Navani, D. JoVE Monthly Highlights: October 2017 - Traps for Emerald Ash Borers, Owner/Pet Relationships, Flexural Behavior of Biological Structures, and Study of Nanoparticle Self-Assembly. *J. Vis. Exp.* (128), e5882, doi:10.3791/5882 (2017).

## Abstract

Here's a look at what's coming up in the October 2017 issue of [JoVE: The World's Premier Video Journal](#).

From the bubbling cauldron of science emerges our first featured article, from [JoVE Environment](#). Here, [our Authors](#) demonstrate how to build and deploy double-decker traps to attract and capture emerald ash borers - the most destructive forest insect to invade North America. These traps capture significantly more emerald ash borers than any other trap type in sites with relatively low EAB densities, allowing for effective detection and management of this invasive insect. Even more than giant creepy spiderwebs!

Moving from pests to pets, our next study from [JoVE Behavior](#) takes a look at man's best friend. Here, [our Authors](#) describe eight different experimental tasks to analyze the relationship between dogs and their owners. The results of this standardized study suggest that owner warmth is the greatest source of behavioral variance - and that dogs belonging to more controlling owners tend to be more aggressive towards strangers. And good doggies get treats...no tricks!

Switching gears, in [JoVE Bioengineering](#) this month [our Authors](#) use a custom built mechanical testing device to measure the flexural behavior of load bearing biological structures. The successful execution of this three-point bending test on the skeletal elements from marine sponges shows that this method can be used to understand the remarkable mechanical functions of a host of similar structures. That's heavy stuff!

Finally, [JoVE Chemistry](#) zooms in on nanoparticle self-assembly processes in real time. Using uniformly sized platinum and lead selenide nanoparticles, [our Authors](#) produced liquid cells with silicon or silicon nitride or windows. Liquid-cell transmission electron microscopy analysis reveals that changes in the solvent boundaries, caused by evaporation, affects nanoparticle self-assembly by driving them to form amorphous aggregates. These aggregates then flatten, producing spellbinding two-dimensional self-assembled structures.

You've just had a sneak peek of the October 2017 issue of JoVE. Visit the website to see the full-length articles, plus many more, in [JoVE: The World's Premier Video Journal](#).

## Video Link

The video component of this article can be found at <https://www.jove.com/video/5882/>

## Protocol

### A Millimeter Scale Flexural Testing System for Measuring the Mechanical Properties of Marine Sponge Spicules

Michael A. Monn, Jarod Ferreira, Jianzhe Yang, Haneesh Kesari

School of Engineering, [Brown University](#)

We present a protocol for performing three-point bending tests on sub-millimeter scale fibers using a custom-built mechanical testing device. The device can measure forces ranging from 20  $\mu$ N up to 10 N and can therefore accommodate a variety of fiber sizes.

### The Other End of the Leash: An Experimental Test to Analyze How Owners Interact with Their Pet Dogs

Giulia Cimarelli<sup>1,2,3</sup>, Borbála Turcsán<sup>1,4</sup>, Friederike Range<sup>1,2</sup>, Zsófia Virányi<sup>1,2</sup>

<sup>1</sup>Comparative Cognition, Messerli Research Institute, [University of Veterinary Medicine of Vienna](#), [Medical University of Vienna](#), [University of Vienna](#), <sup>2</sup>Wolf Science Center, Messerli Research Institute, [University of Veterinary Medicine of Vienna](#), [Medical University of Vienna](#),

**University of Vienna**, <sup>3</sup>Department of Cognitive Biology, **University of Vienna**, <sup>4</sup>Research Centre for Natural Sciences, Institute of Cognitive Neuroscience and Psychology, **Hungarian Academy of Sciences**

This article presents eight different experimental tasks, mirroring the everyday life of dogs and owners, used to analyze how owners interact with their dogs in a standardized way. The tasks included both positive (e.g. play) and negative (potentially stressful) situations (e.g. physical restriction).

## Liquid-cell Transmission Electron Microscopy for Tracking Self-assembly of Nanoparticles

Byung Hyo Kim<sup>1,2</sup>, Junyoung Heo<sup>1,2</sup>, Won Chul Lee<sup>3</sup>, Jungwon Park<sup>1,2</sup>

<sup>1</sup>Center for Nanoparticle Research, **Institute for Basic Science (IBS)**, <sup>2</sup>School of Chemical and Biological Engineering, Institute of Chemical Processes, **Seoul National University**, <sup>3</sup>Department of Mechanical Engineering, **Hanyang University**

Here we introduce experimental protocols for the real-time observation of a self-assembly process using liquid-cell transmission electron microscopy.

## Building Double-decker Traps for Early Detection of Emerald Ash Borer

Deborah G. McCullough<sup>1</sup>, Therese M. Poland<sup>2</sup>

<sup>1</sup>Department of Entomology and Department of Forestry, **Michigan State University**, <sup>2</sup>Northern Research Station, **USDA Forest Service**

Effective traps to attract and capture the emerald ash borer (EAB) are a key element of detecting and managing this invasive pest. Double-decker traps, placed in full sun near ash trees, incorporate visual and olfactory cues and were more likely to capture EAB than other trap designs in field trials.

## Disclosures

No conflicts of interest declared.