

2009 Video Gallery

The Division of Fluid Dynamics exists for the advancement and diffusion of knowledge of the physics of fluids with special emphasis on the dynamical theories of the liquid, plastic and gaseous states of matter under all conditions of temperature and pressure.

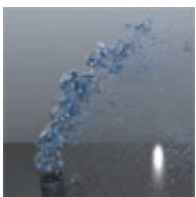
Every year, the APS Division of Fluid Dynamics hosts a physical Gallery of Fluid Motion at its annual meeting—a room where stunning graphics and videos from computational or experimental studies showing flow phenomena are displayed. The most outstanding entries are selected by a panel of referees for artistic content and honored for their originality and ability to convey information. Past winners are published in the journal *Physics of Fluids* (<http://pof.aip.org/pof/gallery/>).

The Gallery of Fluid Motion at the 62nd APS Division of Fluid Dynamics Annual Meeting (<http://dfd2009.umn.edu/>), held from November 22-24, 2009 at the Minneapolis Convention Center, highlighted a subset of submitted images and videos prior to the judging process.

► 2009 Image Gallery (</units/dfd/pressroom/gallery/2009/index.cfm>)

Breakup of a Jet of Liquid in the Wind

Video by Sandeep Rana and Marcus Herrmann, Arizona State University



"We present a visualization of the primary atomization of a turbulent liquid jet injected into a turbulent gaseous cross-stream."

► Watch Video (<http://ecommons.library.cornell.edu/handle/1813/14132>)

How the Sand Swimming Lizard Swims in Sand

Video by Ryan D. Maladen, Yang Ding, Adam Kamor and Daniel I. Goldman, Georgia Institute of Technology



"We use high-speed x-ray imaging to reveal how a small (~10cm) desert dwelling lizard, the sandfish (*Scincus scincus*), swims in a granular medium."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14104\)](http://ecommons.library.cornell.edu/handle/1813/14104)

Moving Droplets with Light

Video by Han-Sheng Chuang, Alope Kumar and Steven T. Wereley, Purdue University

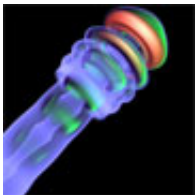


"This fluid dynamics video showcases how optically induced electrowetting can be used to manipulate liquid droplets in open space."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14103\)](http://ecommons.library.cornell.edu/handle/1813/14103)

Simulating a Jellyfish's Movement

Video by Johannes Tophøj Rasmussen, Francesca Storti, DTU; Jens Honore Walther, DTU and ETHZ; and, Diego Rosinelli and Petros Koumoutsakos, ETHZ

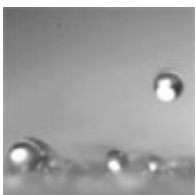


"We present simulations of the vortex dynamics associated with the self-propelled motion of jellyfish."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14080\)](http://ecommons.library.cornell.edu/handle/1813/14080)

Merging Drops Jump on Hydrophobic Surface

Video by Jonathan Boreyko and Chuan-Hua Chen, Duke University

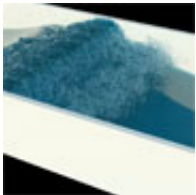


"When micrometric drops coalesce in-plane on a superhydrophobic surface, a surprising out-of-plane jumping motion was observed."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14095\)](http://ecommons.library.cornell.edu/handle/1813/14095)

A Numerical Simulation of a Plunging Breaking Wave

Video by Paul Adams, Kevin George and Mike Stephens, ERDC DSRC; and, Douglas Dommermuth, Kyle A. Brucker and Thomas O'Shea, Science Applications International Corporation

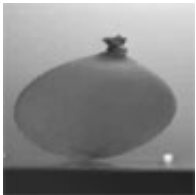


"The video shows the results of a numerical simulation of a deep water plunging breaking wave."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/13802\)](http://ecommons.library.cornell.edu/handle/1813/13802)

Bouncing of a Droplet on Superhydrophobic Surface in AC Electrowetting

Video by Seung Jun Lee, Sanghyun Lee, and Kwan Hyung Kang, POSTECH

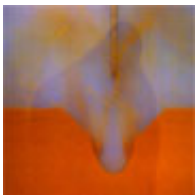


"The controlled droplet jumping made by the resonant AC electrowetting shown in this movie could be a historical milestone in digital microfluidics ..."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14082\)](http://ecommons.library.cornell.edu/handle/1813/14082)

Landing on the Moon: Cratering from a Jet

Video by Abe Clark, Bob Behringer, Duke University; and, John Brandenburg, ORBITEC

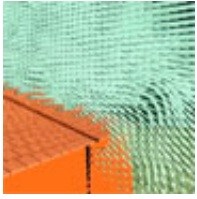


"This project characterizes crater formation in a granular material by a jet of gas impinging on a granular material, such as a retro-rocket landing on the moon."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14096\)](http://ecommons.library.cornell.edu/handle/1813/14096)

Turbulent Flow Over a House in a Simulated Hurricane

Video by Zachary Taylor, Murray Morrison and Gregory Kopp, University of Western Ontario; and, Roi Gurka, Ben-Gurion University

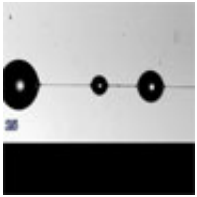


"Every year hurricanes and other extreme wind storms cause billions of dollars in damage worldwide. A series of wind tunnel tests have been performed on a house in a simulated atmospheric boundary layer ..."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14089\)](http://ecommons.library.cornell.edu/handle/1813/14089)

Saliva Filament

Video by Christian Wagner and Rainer Sattler, Saarland University; and Jens Eggers, University of Bristol



"The video shows the shadowgraph of a break-up of a capillary bridge of a droplet of saliva from a healthy donor."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/13680\)](http://ecommons.library.cornell.edu/handle/1813/13680)

Hovering Pyramid

Video by Bin Liu, Annie Weathers, Stephen Childress and Jun Zhang of New York University



"A free rigid object, here a hollow 'pyramid,' can hover quite stably against gravity in the oscillating airflow ..."

► [Watch Video \(http://ecommons.library.cornell.edu/handle/1813/14101\)](http://ecommons.library.cornell.edu/handle/1813/14101)