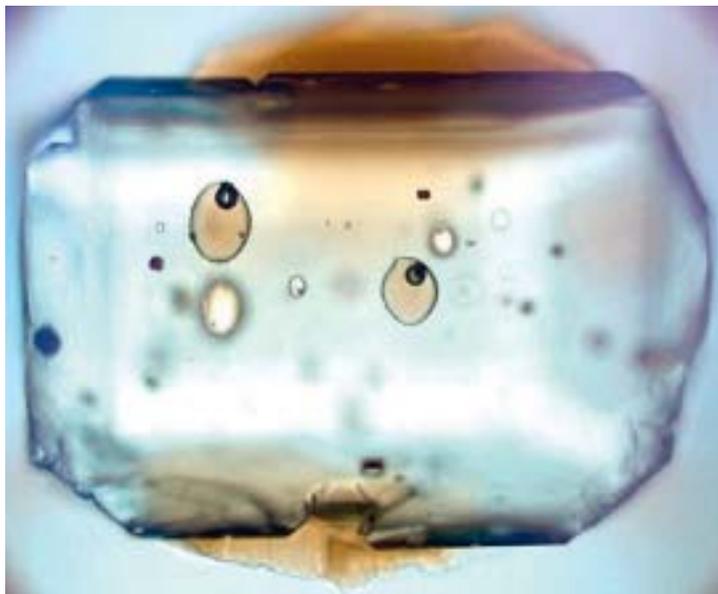


Volcanoes as Rapid Recycling Plants

Oceanic crust reappears on the surface just 500 million years after sinking away

Geo-recycling in volcanoes is a much faster process than scientists previously assumed. Rock from the Earth's mantle that falls into the interior of the Earth from the ocean floor as a result of tectonic movement is returned to the surface via volcanoes after around just 500 million years – not, as previously assumed, after 2 billion years. Researchers from the Max Planck Institute for Chemistry in Mainz determined this using volcanic rock samples from Hawaii, analyzing the strontium isotope ratio in the remains of seawater inclusions in basalt. As the isotope ratio depends on when the water entered the rock, it is also possible to determine the age of the basalt. (NATURE, AUGUST 10, 2011)

A witness to the history of the Earth: When this olivine crystal, which measures just under one millimeter in width, was created, it was penetrated by melt droplets that hardened to a glassy brown oval shape. The black dots are gas bubbles. The glassy inclusions contain strontium isotope ratios that occurred in seawater 500 million years ago.



Origami on a Seed Capsule

Ice plants have a clever opening mechanism to ensure that their seeds germinate

Some plants have an almost artistic method of seed dispersal: The seed capsules of the ice plant *Delosperma nakurense*, for example, unfold the lids of their seed capsules like a moveable piece of origami as soon as they are moistened by rain. Matt Harrington and his colleagues at the Max Planck Institute of Colloids and Interfaces in Potsdam discovered this in a detailed examina-

tion of the opening mechanism. The lids open because honeycomb-shaped cells on their interior absorb water and change their structure. When they dry, the lids close again and curve inward so that the seed chambers are tightly covered and can't open accidentally. In this way, the plant improves the chances that its seed will germinate in very dry areas. Taking this as their model, the

researchers now want to develop materials that move when they become wet or when their temperature changes. (NATURE COMMUNICATIONS, JUNE 7, 2011)

The seed capsules of the ice plant, *D. nakurense*, open at the right time. During dry periods, five lids close the capsule (left). As soon as it rains, the five lids on the capsule open (center). They are pushed open by tissue that swells as it becomes saturated with water (right).

