

DATABASE

Skimming the Surface

A physicist can deduce a lot about a metal from its Fermi surface, which maps the momentum of electrons moving in different directions within the crystal lattice. The contours of the surface reveal the crystal's optical, thermal, and electrical properties such as how its conductivity will change in a magnetic field. Physics postdoc Tat-Sang Choy of Ohio State University, Columbus, and colleagues built this storehouse of Fermi surface data. The gallery depicts the theoretically determined surfaces for more than 40 metallic elements, including gold, zirconium, and rhenium (left). If you cross your eyes, paired stereographic images of each element merge into a single 3D illustration. You can also download the coordinates for the surfaces. >>

www.phys.ufl.edu/fermisurface

WEB LOGS

Fat Chat

Will the public health campaign to reduce childhood obesity lead to more cases of eating disorders such as anorexia nervosa? Will single changes such as pulling soft-drink vending machines from schools make any impact on our girth? Those are two of the issues under discussion at this new Web log from health policy mavens at Yale University. The blog, which launched in early July, posts opinions from staff at the university's Rudd Center for Food Policy and Obesity. >>

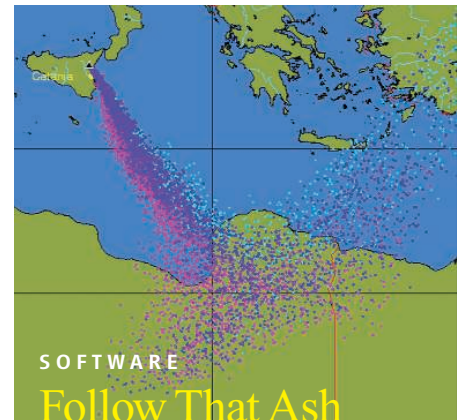
www.ruddsoundbites.typepad.com

TOOLS

Bad Air Watch

Unlike the protective ozone high in the atmosphere, ozone near Earth's surface is a killer. Exposure to the gas, which forms when sunlight cooks car exhaust and other pollutants, erodes the lungs and can trigger deadly asthma attacks. The new Ozone Web site from the European Environment Agency in Copenhagen, Denmark, displays hourly ozone measurements from more than 500 recording stations across Europe. Visitors can also compare current readings to daily, weekly, and monthly trends. The information, some of which is newly available in real time, allows the public to find out when concentrations are unsafe. The data can also help scientists who are trying to understand ozone's movement—within a day, it can wander 400 to 500 kilometers from its source. >>

www.eea.europa.eu/maps/ozone/welcome



The eruption of Mount Etna in Italy on 22 July 2001 lofted ash more than 5 kilometers into the atmosphere. Tracking the spread of this material can be tricky because even today's sensitive satellites find it "difficult to 'see' ash clouds," notes engineer Rorik Peterson of the University of Alaska, Fairbanks. To help out, Peterson and colleagues offer a program called Puff that projects the path of volcano plumes based on wind data. The software is useful for researchers studying the effects of eruptions, but it also has practical applications, such as guiding aircraft around concentrations of airborne grit that can clog their engines. Above, the program's trajectory for Etna's ash plume. >>

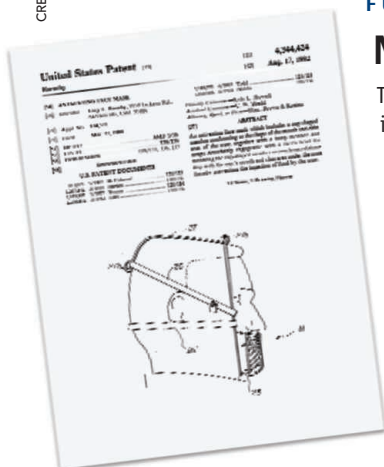
puff.images.alaska.edu/index.shtml

FUN

Not-Ready-for-Prime-Time Patents

The light bulb and the microchip were stellar ideas that revolutionized our lives. The bird diaper and the gravity-powered shoe air conditioner? Not so much. Check out these dubious innovations and more than 50 other examples of ingenuity gone awry at the Gallery of Obscure Patents, hosted by the publisher Thomson's Delphion patent service. The site provides excerpts from the patent documents, original drawings, and even animations showing the creations in action. However, you have to pay to see the full patent for entries such as the anti-teating facemask (left), a diet aid whose inventor proudly noted that it can be "locked in place on the user's head to prevent removal." >>

www.delphion.com/gallery



Send site suggestions to >> netwatch@aaas.org

Archive: www.sciencemag.org/netwatch