NETWATCH

edited by JOCELYN KAISER

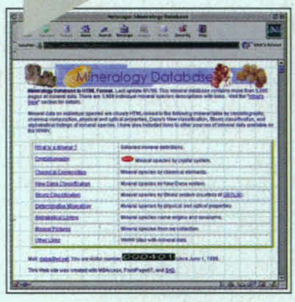
SITE VISIT

Mineral Data Mining

Blood-red crystals of cinnabar, frosty white calcite, eggplant-purple chunks of azurite. These are among the nearly 4000 known minerals—inorganic solids formed in the heart of erupting volcanoes, for instance, or deep below the surface where colliding plates meet. For an excellent reference, try the Mineralogy Database, created as a hobby by David Barthelmy, a geology consultant in Houston.

Barthelmy says visitors range from industry types looking for clues to how much oil may be trapped in particular rock formations to academics seeking data on zeolites, which are used in catalysis and other chemical processes. The Mineralogy Database sorts its rocks in all kinds of ways: by element, name, or color, or even how they fracture or whether they're streaked. (A typical entry: Wulfenite, also known as yellow lead ore, consists of orange crystals made of molybdenum, lead, and oxygen and was named after the Austrian mineralogist F. X. Wulfen.) You can also look up a mineral by its so-called New Dana ID number. A section on crystallography describes structural classes—such as orthorhombic and tetragonal—and links to other Web pages on crystals. The site is picture poor, but it can send you to visually rich sites such as the Ecole des Mines de Paris.

web.wt.net/~daba/Mineral



HOT PICKS

On trial. Want to know who's testing that hot new experimental cancer drug and where? Here you'll find a list of over 7500 clinical trials around the world vetting treatments for everything from colon cancer to rheumatoid arthritis. The site also takes note of drugs newly approved by the U.S. Food and Drug Administration. www.centerwatch.com

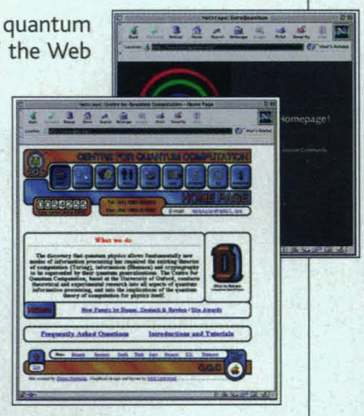
Colliding worlds. Brookhaven's Relativistic Heavy Ion Collider, which will start bashing particles later this month, offers a spiffy new Web site including a virtual tour, a physics primer, and info on collider research. www.rhic.bnl.gov

By the numbers. The Glossary of Mathematical Mistakes shoots down distortions in the media and ads, covering topics such as cancer clusters, your chances of winning the lottery, and how many computers were really hit by the Chernobyl virus. www.mathmistakes.com.

SITE VISIT

Quantum Computing on Cue

If quantum computers are ever built, they might need only minutes to perform tasks that would take today's fastest supercomputer millions of years. Quantum bits, or qubits, which store and process information, can assume the values of 1 and 0 simultaneously. That means 100 qubits can calculate in just one step a computation that ordinary bits would need to repeat 2^{100} times. Confused or intrigued? Check out the University of Oxford's Centre for Quantum Computation Web site (www.qubit.org). Besides serving experts, "we try to maintain information which will interest people who simply wonder what quantum computing is all about," says one of the Web masters, Benjamin Simon.



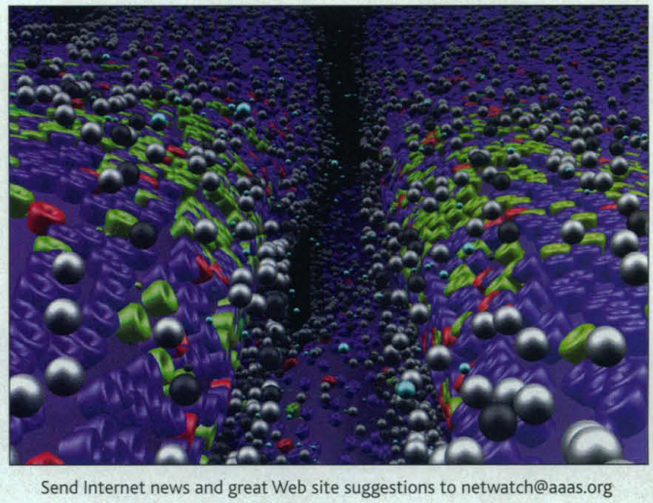
The site's list of frequently asked questions and tutorials delves into topics such as how, by factoring very large numbers quickly, quantum computing can be exploited to crack existing cryptographic codes; and how quantum teleportation can be used to transport information securely over long distances. People up to speed on quantum computing will find links to recent papers, as well as a jobs listing and links to conferences. Use the site as a springboard to access the Web pages of research groups that describe attempts to build quantum computers: A Stanford-Berkeley-MIT-IBM collaboration uses atomic nuclei as qubits, which they tweak with magnetic fields, and a Los Alamos group makes qubits by trapping and manipulating ions with lasers.

Another worthwhile site is the EuroQuantum home page (www.euroquantum.org) at the University of Vienna. It describes work on quantum computing in Europe and also has a good set of tutorials for interested beginners.

COOL IMAGES

Some Nerve

This vista (below) of hundreds of balls cascading into a rut simulates what's probably happening right now at nerve junctions in your eye muscles as you read these words. The scattered blue balls represent acetylcholine, a neurotransmitter that binds to receptors (the purple and yellow cups) and sparks a current that leads to muscle contraction. Researchers are modeling how neurotransmitters diffuse across a synapse in part to better understand neurodegenerative diseases. The computer simulation, by researchers at the Salk Institute in La Jolla, California, and Cornell University, appears in an image archive at the home page (www.npaci.edu) of the National Partnership for Advanced Computational Infrastructure, a consortium of supercomputing researchers. Also check out molecules and brain maps, models of tectonic plates and ocean currents, and a plasma cloud crashing into Earth's magnetosphere.



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