



Welcome to Vol. 9 No. 7 of Design Science News, the e-bulletin of the Buckminster Fuller Institute

Design Science News brings you news from around the world related to humanity's option for success and comprehensive design science. It also features updates from BFI and periodic special offers for our members.

2008 Buckminster Fuller Challenge conferring ceremony and other New York City events image gallery online



2008 Buckminster Fuller Challenge Events

Photos from the 2008 Buckminster Fuller Challenge conferring ceremony and other special events held in June at the Center for Architecture in New York City. Photos courtesy of Martin Seck.

There are 38 images in this gallery

To view photos from the 2008 Challenge conferring ceremony and other Bucky events at the Center for Architecture in New York City, please visit: bfi.org

2009 Buckminster Fuller Challenge



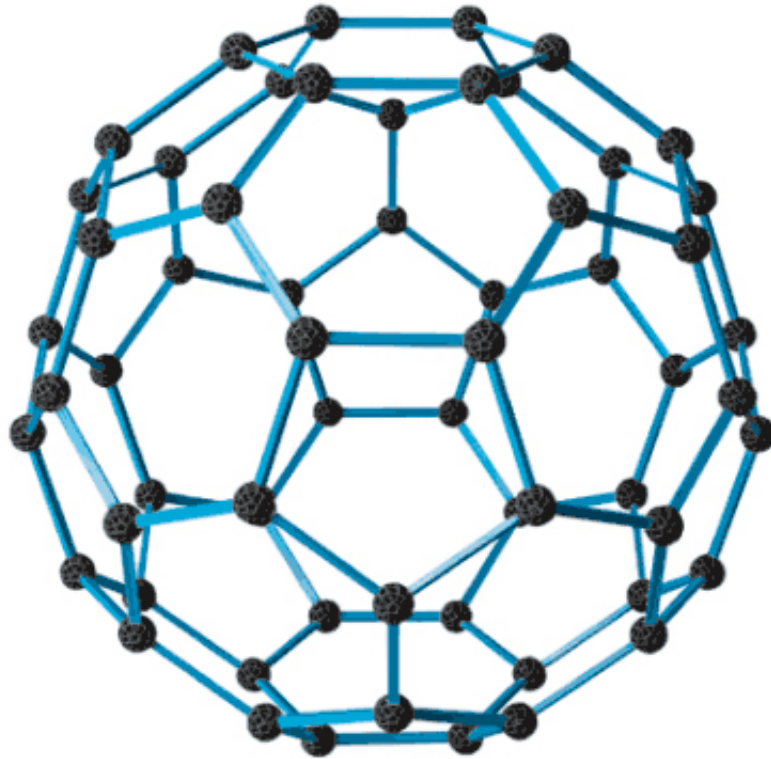
THE BUCKMINSTER FULLER CHALLENGE

Catalyzing the vanguard of a design science revolution

The 2009 Buckminster Fuller Challenge call for proposals will be issued in mid-September!

For more details about the call for proposals, selection process, eligibility requirements, and entry guidelines check <http://challenge.bfi.org> regularly over the coming weeks or subscribe to our mailing list by sending an email with "subscribe" in the subject line to [challenge \(at\) bfi \(dot\) org](mailto:challenge@bfi.org).

**DYMAXION ARTIFACTS STORE: C60
"Buckyball" Kit**

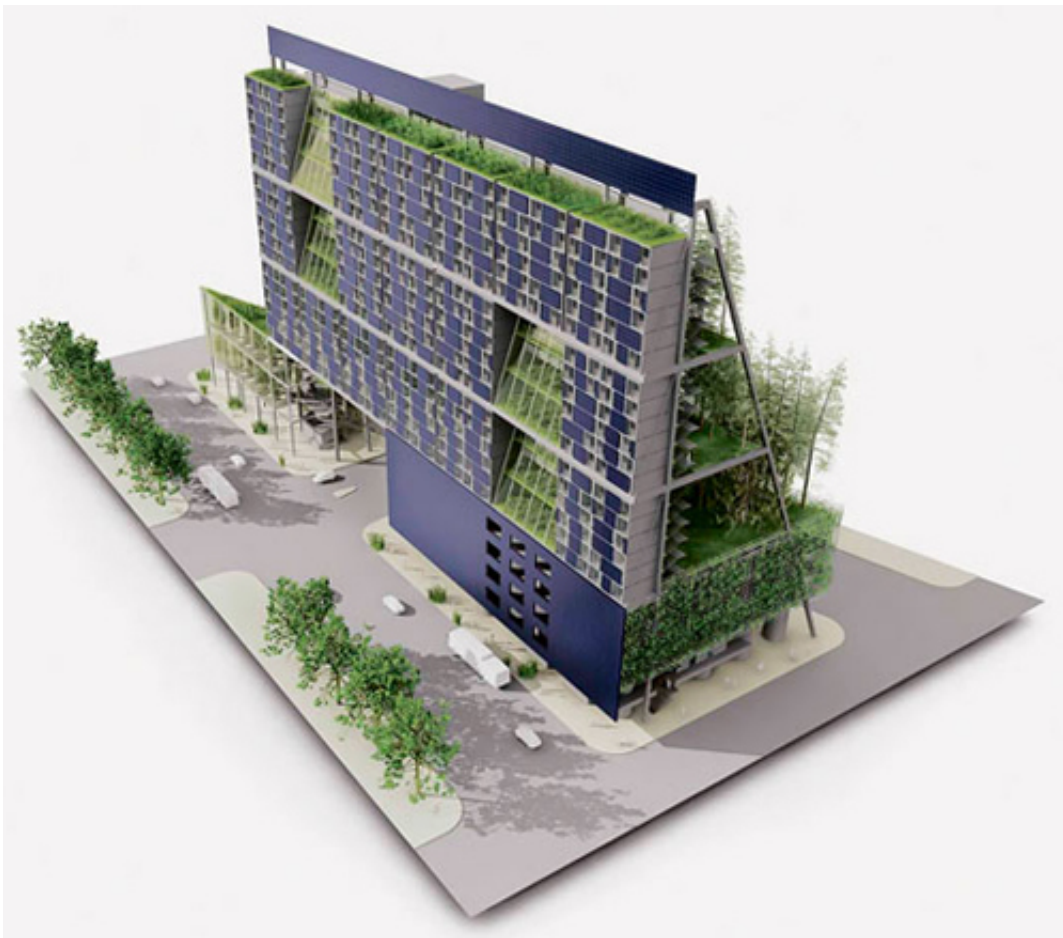


The Buckyball, also known as C₆₀ or buckminsterfullerene, is a densely-packed crystal of carbon atoms made up of 20 hexagons and 12 pentagons and spherical in structure. This Buckyball science model is easy to build, with simple, step-by-step illustrations. Contains 60 connector balls and 90 blue struts.

[Order yours today!](#)

TRENDS & PERSPECTIVES

New interest in vertical farms for urban areas



What if “eating local” in Shanghai or New York meant getting your fresh produce from five blocks away? And what if skyscrapers grew off the grid, as verdant, self-sustaining towers where city slickers cultivated their own food?

Dickson Despommier, a professor of public health at Columbia University, hopes to make these zucchini-in-the-sky visions a reality. Dr. Despommier’s pet project is the “vertical farm,” a concept he created in 1999 with graduate students in his class on medical ecology, the study of how the environment and human health interact.

The idea, which has captured the imagination of several architects in the United States and Europe in the past several years, just caught the eye of another big city dreamer: Scott M. Stringer, the Manhattan borough president.

When Mr. Stringer heard about the concept in June, he said he immediately pictured a “food farm” addition to the New York City skyline. “Obviously we don’t have vast amounts of vacant land,” he said in a phone interview. “But the sky is

the limit in Manhattan.” Mr. Stringer’s office is “sketching out what it would take to pilot a vertical farm,” and plans to pitch a feasibility study to the mayor’s office within the next couple of months, he said.

“I think we can really do this,” he added. “We could get the funding.” (Source: [The New York Times](http://www.nytimes.com/2008/07/15/science/15farm.html))

<http://www.nytimes.com/2008/07/15/science/15farm.html>

[Click here](#) to view the vertical farm entered into the 2008 Buckminster Fuller Challenge by Dr. Despommier and a team from New York Sun Works.

The problem with big green



Do small steps actually lead anywhere? We all know the theory that small steps lead to bigger steps, which lead in turn to real change. And there are certainly a lot of small steps on offer these days, from the latest home energy tracker to the solar bikini. But it’s not at all clear that the ready abundance of small steps is actually making any difference. Indeed, between greenwashing and green fatigue, emphasizing little behavioral changes may actually be hurting.

Until recently, suggesting that “going green” in this fashion wasn’t a correct path was a quick route to condemnation. But now, some of the world’s most prestigious environmental advocates are beginning to call for a whole new approach.

WWF recently published a major report, *Weathercocks and Signposts: the environment movement at a crossroads*, which launches a major assault on green consumerism and social marketing as avenues to sustainability, and encourages instead a new and more committed values-based approach. (Source: [Worldchanging](http://www.worldchanging.com/archives/008144.html))

<http://www.worldchanging.com/archives/008144.html>

Buckminster Fuller’s design science principles are just such an example of a comprehensive values-based approach, [click here](#) for a collection of free resources and reference documents about design science.

The case for efficiency



Beyond coal, petroleum, nuclear
and alternative energy, there's
another, untapped resource: efficiency.

Time to exploit it.

Using smarter technologies, more brains and less money to wring more work from less delivered energy - what energy experts call “end-use efficiency” - is the largest, cheapest, safest, cleanest, fastest, most diverse, least visible, least understood and most neglected way to provide energy services.

How big is it? The 46% drop in U.S. energy intensity, a measure of energy consumption per dollar of real gross domestic product, during 1975-2005 represented, by 2005, the equivalent of a new energy “source.” This source was slightly larger than annual total European energy use, 2.1 times the size of U.S. oil consumption, 3.4 times bigger than U.S. net oil imports, six times domestic oil output or net oil imports from OPEC countries and 13 times net imports from Persian Gulf countries.

But because these savings came not from giant plants but in zillions of tiny pieces imperceptible to the untrained eye, energy efficiency gets little respect. It's ironic, given that rising energy prices automatically make efficiency gains more valuable, and cheaper to attain. And we've barely scratched the surface. Fully exploiting wherever practical the best available efficiency techniques throughout the U.S. economy could save half our oil and gas use, and three-fourths of our electricity, at about an eighth of their current price. Innovative designs, technologies, policies and marketing methods are increasing that potential faster than we are using it up.

The three big efficiency stories - oil, gas and electricity - are all remarkable. As detailed in a Pentagon-co-sponsored 2004 study titled "Winning the Oil Endgame," half of U.S. oil can be saved for the equivalent of \$12 a barrel, mainly by tripling the efficiency of cars, trucks and planes - without sacrificing consumer-pleasing design. (Source: [Forbes](http://www.forbes.com/2008/07/03/energy-efficiency-biz-energy_cx_al_0707efficiency_lovins.html))

http://www.forbes.com/2008/07/03/energy-efficiency-biz-energy_cx_al_0707efficiency_lovins.html

Termite bellies and biofuels



Falk Warnecke peered down through a mounted magnifying glass and poked gently at a small pile of bugs. They were dead-frozen and heaped on a chilled metal block like coffee grounds mounded on a spoon. With a pair of fine-tipped forceps, he grabbed one of the insects at the base of its thorax and lifted it off the block. It was brown, and hardly bigger than an eyelash. With a second forceps, he pinched the end of its abdomen. He tugged gently, and pulled it in two. A shiny, reddish string slid smoothly out of the exoskeleton. Warnecke smiled. "That's a good thing about termites," he said with a thick German accent. "You get the whole gut in one piece."

Warnecke doesn't want the termite's plumbing to get torn and its contents mixed around. It's the contents he's interested in. The gut has bulbous chambers that are swollen with vast quantities of microbes that the termites employ to break down cellulose from the wood or grass the insects consume. When he's not calling termites "cute little

animals,” he refers to them as “walking bioreactors,” and considers their juicy interiors a kind of liquid gold. For now, he’s interested only in the biggest bulb on the string, what’s known as the third proctodeal segment, or, in the vernacular of microbial ecology, the “hindgut paunch.” This microliter-sized compartment - much larger than the surrounding gut sections and easily distinguished with the naked eye - is home to a distinct community of microbes that some people think may help solve the energy crisis.

Warnecke, a researcher at the U.S. Department of Energy’s Joint Genome Institute in Walnut Creek, California, has been generating lots of attention lately for his work with termites. The insects are remarkably efficient at turning cellulose into sugar - the first step in making fuel from plants like switchgrass or poplar trees. Scientists can’t compete with termites. They can break apart cellulose’s tough bonds in the lab, but the enzymes they use are wildly, prohibitively expensive. That’s where Warnecke comes in. His research has some people salivating at the prospect of dipping into the termites’ microbial stew and pulling out a few enzymes that would finally make it possible to produce ethanol from cellulose on an industrial scale. (Source: [Smithsonian Magazine](http://www.smithsonianmag.com/science-nature/termites-bellies-biofuels.html))

<http://www.smithsonianmag.com/science-nature/termites-bellies-biofuels.html>

RESOURCES

The periodic table of videos

28 Ni Nickel 58.6934	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.64	33 As Arsenic 74.92160	34 Se Selenium 78.96
46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60
78 Pt Platinum 195.084	79 Au Gold 196.966569	80 Hg Mercury 200.59	81 Tl Thallium 204.3833	82 Pb Lead 207.2	83 Bi Bismuth 208.98040	84 Po Polonium (208.9824)
110 Ds Darmstadtium (271)	111 Rg Roentgenium (272)	112 Uub Ununbium (285)	113 Uut Ununtrium (284)	114 Uuq Ununquadium (289)	115 Uup Ununpentium (288)	116 Uuh Ununhexium (292)

The chemical elements are being brought to life online in a series of YouTube videos filmed at a UK university.

The project by a team in Nottingham is designed to stimulate interest in chemistry and comprises videos illustrating each of the 118 elements. They feature a variety of experiments, some of which are too dangerous to be performed in classrooms. In the videos, scientists also recall personal anecdotes and amazing facts about each element in the table, from hydrogen (1) to Ununoctium (118).

Check out the videos [here](#)

How to save electricity



Some great, simple energy saving tips to cut electric bills and increase efficiency.

[Go to the guide](#)

EVENTS

Symposium: Buckminster Fuller Starting with the Universe



Friday, September 12 - Saturday, September 13
The Great Hall of the Cooper Union
7 East 7th Street, at Astor Place
New York, NY

Visionary designer, philosopher, poet, inventor, engineer, and advocate of sustainability, Buckminster Fuller was one of the great transdisciplinary thinkers of the last century with a legacy that extends to nearly every field of the arts and

sciences. This symposium takes its cue from Fuller's dictum, "I always say to myself, what is the most important thing we can think about at this extraordinary moment," and explores the diverse ways in which contemporary scholars and practitioners are pushing Fuller's ideas and projects into the 21st century.

For more information, [visit the Whitney Museum website](#)

Have you come across interesting Design Science news articles, resources, or events?

We invite you to forward them so we can consider them for inclusion in future e-bulletins. Send them to:
[designsciencenews \(at\) bfi \(dot\) org](mailto:designsciencenews(at)bfi(dot)org)

If we use your suggestion for future e-bulletins and you would like to be credited by name, please indicate it in your e-mail.

Thank You!

PRIVACY STATEMENT: BFI respects your privacy, so we will never share any personal information without your consent.

To unsubscribe from this newsletter, send email to [this address](#).

To never receive email from **The Buckminster Fuller Institute**, send email to [this address](#).

This email is sent from:
The Buckminster Fuller Institute
{domain.address}
