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MASS HIGH TECH

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## Nanotechnology's juiciest target: 'Green' construction

**A**sk your friends what “nanotechnology” means. They’ll mention breakthroughs in medicine and computing — maybe even the space elevator that NASA’s talking about. But building materials? Face it: Who considers cement and steel to be high tech? How excited can you get about insulation, glass, paint, fabrics, light bulbs or HVAC?

Yet thanks to nanotechnology, building products are undergoing a revolution ahead of developments in medicine and computing. Nanotechnology is already changing how people think about “green”

buildings — lowering the cost of construction and maintenance and reducing energy. What’s more, many of these products are from Massachusetts outfits — old ones such as Cabot Corp. and young ones such as Aspen Technology Inc., Konarka Technologies Inc., A123Systems Inc. and Soane Labs.

It’s certainly time. Buildings produce 60 percent of global industrial waste and consume 60 percent of the electricity in developed nations — 40 percent of total available energy. Lighting alone consumes 20 percent of electricity. These facts make building owners huge political targets, because Congress is looking beyond traditional scapegoats (sport

utility vehicles) and pointing at the biggest polluters and energy consumers. And soon they may pass cap-and-trade agreements that are economywide and that will have an impact on property owners.

Other forces are also converging to provoke new thinking about buildings and building codes: oil wars in the Middle East; Hurricane Katrina; the collapse of the World Trade Center towers; the 2006 Asian tsunami; rising food prices thanks to bio-fuel demand; and, of course, the U.N.’s reports on climate change, which finally hold humans responsible. As a result, the long-awaited watershed is here, codes are changing (yes, here in Boston) and a lot of smart people are engaged in new ways of thinking about buildings. And nanotechnology gives them a new box of tools to play with.

Nanotechnology is not new. The term was coined at MIT 27 years ago by one of Marvin Minsky’s graduate students, the controversial K. Eric Drexler, who wrote the 1984 classic “Engines of Creation.” But Nobel Laureate Richard Feynman had a similar idea in 1959. More recently, the 1994 Nobel Prize was awarded for nanotech: Richard Smalley discovered a new class of carbon and named it “Buckminsterfullerene” after Massachusetts native, visionary architect-engineer and Harvard University castoff R. Buckminster Fuller.

Backed by boatloads of federal money, Massachusetts is ahead of the curve in nanotechnology development. But nobody is talk-

ing about the earliest beneficiary: building materials. The National Science Foundation calls nanotech “the next industrial revolution.” Can we hang on to the jobs it creates?

In the 1960s and ’70s, Cambridge was the hub of the architectural universe. Bauhaus founder Walter Gropius taught at Harvard and led the world’s largest architecture firm from its headquarters on Storey Street in Harvard Square. Will the nanotech revolution produce another generation of visionary planners, developers, architects and designers?

When the Great Fire destroyed Chicago in 1897, Harvard reject Daniel Burnham and other visionaries sought high-tech advances like steel, reinforced concrete, plate glass and electric elevators to create the world’s first modern high-rise city.

Can Massachusetts catalyze a 21st century renaissance using nanomaterials? A local group, NanoNexis2007 (in conjunction with MIT’s Enterprise Forum and others), is planning several events in 2007 and 2008 about nanotech and the built environment, including an executive roundtable, a design competition, a global broadcast, and a conference at the new Boston Convention Center. The future of design is here. Let’s use it.

**DAVID M. SYKES** is managing partner of Remington Partners in Cambridge and a co-founder of NanoNexis LLC. He can be reached at [david.sykes@remington-partners.com](mailto:david.sykes@remington-partners.com).

### HOW I SEE IT



David M. Sykes