

The other finalists were MIT's Solid Energy Systems, with its high-energy-density, liquid-polymer lithium battery technology; Columbia University's Radiator Labs, which has designed a wireless control system that reduces overheating in large buildings; the Stanford Nitrogen Group, which has developed a wastewater treatment system partially powered by the reactive nitrogen recovered from the waste stream; and the University of Central Florida's Mesdi Systems, whose proprietary electrospray process reduces lithium-ion battery manufacturing costs.

Economic kickstart

The contest gives entrepreneurial scientists an opportunity to team up with and learn from students and professionals in the business community. Wilmer and Farha, who both say they plan to stay in academia, met their business partners—MBA and law students—through other competitions. And the Ronquillos met Lewis, and the two other MBA students who helped them draft their business plan, through a new-ventures development center at the University of Utah's business school.

The Obama administration expects such collaborations to help kickstart the sluggish economy, create jobs, and spur the development of clean-energy technologies. NuMat's winning technology and the work they did to develop a business plan and sell the idea to investors are laying "the groundwork for future economic opportunities that will ensure America remains competitive in the global clean energy race," said US Energy Secretary Steven Chu at the competition finale.

Jermey N. A. Matthews

news notes

Nuclear data. The half-lives, decay modes, and emission energies of some 3847 experimentally observed nuclide ground states and isomers are presented in the 8th edition of the *Karlsruhe Nuclide Chart*, published in July by Nucleonica, an online nuclear-science portal company. The chart is a reference and teaching tool for fields such as health physics, radiation physics, nuclear and radio chemistry, astrophysics, Earth sciences, and agriculture.

The chart first came out in 1958, with revisions published every seven years on average. Publication of the latest version was held off to include the two most recently named elements, flerovium (atomic number 114) and livermorium (116). The chart includes details about 193 new nuclides and updates on 544 others.

"We gather research results from all over and put them together," says Joseph Magill, Nucleonica's managing director. Nuclear scientists aim "not just to classify nuclides, but to try to produce superheavy elements," he says. "If you can get beyond element 120, the theory predicts that everything becomes stable again." Nucleonica develops the chart together with the European Commission's Institute for Transuranium Elements in Karlsruhe, Germany.

The chart is available in various hard-copy formats starting at €28 (\$34). The company plans to unveil an online

version soon. More information about the chart is available at <http://www.nucleonica.com>. TF ■

The latest version
of the *Karlsruhe*

22 s	~16 ms
0.31 s	at 9.95
1288	FI 289
69 s	2.1 s
95	at 9.87

176 *Nuclide Chart* includes rows for newly named elements flerovium and livermorium. Each square gives nuclide mass number, half-life, and mode and energy of decay. The mass number is the sum of protons (numbers at left of rows) and neutrons (below columns).

elements, flerovium (atomic number 114) and livermorium (116). The chart includes details about 193 new nuclides and updates on 544 others.

The chart displays the following elements and their associated nuclides:

- Element 114 (Fl):**
 - Fl 281 (~97 ms)
 - Fl 282 (0.82 ms)
 - Fl 283 (3.8 s)
 - Fl 284 (99 ns)
 - Fl 285 (29 s)
- Element 115 (Uup):**
 - Uup 282 (73 ms)
 - Uup 283 (100 ms)
 - Uup 284 (0.48 s)
 - Uup 285 (5.5 s)
 - Uup 286 (~20 s)
- Element 116 (Lv):**
 - Lv 285 (7.1 ms)
 - Lv 286 (18 ms)
 - Lv 287 (18 ms)
 - Lv 288 (0.69 s)
 - Lv 289 (2.1 s)
- Element 117 (Uus):**
 - Uus 293 (14 ms)
 - Uus 294 (78 ms)
- Element 118 (Uuo):**
 - Uuo 294 (0.89 ms)

The chart also includes details about 193 new nuclides and updates on 544 others.

Recently on
physics
today
online...

► Points of View

Sandy Antunes, an astronomer and professor at Capitol College in Laurel, Maryland, and his middle school daughter, Ivy, review a series of physics textbooks that are illustrated in the style of the Japanese comic books known as manga.



► Points of View

The public's perception of basic science is the topic of an opinion piece by Allen Scheie, a physics undergraduate at Grove City College in Pennsylvania and a recent intern on the US House of Representatives' Committee on Science, Space, and Technology.



◀ The Dayside

In his blog, *PHYSICS TODAY* online editor Charles Day writes about his search for physics at this year's San Diego Comic-Con International and about the mixed success of the UK's postwar investment in the applications of gallium arsenide.

www.physicstoday.org