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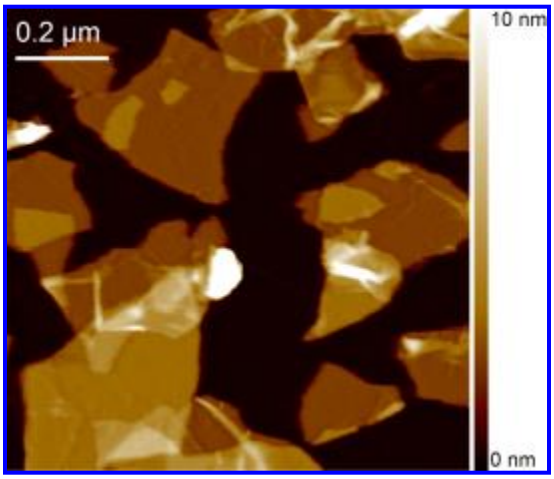
Vorbeck says it can produce graphene cheaply and abundantly



These days the big buzz in materials science is graphene. Kenneth Chang reported in the New York Times science section a few weeks ago that more than 100 papers about graphene were presented at the recent annual meeting of the American Physical Society meeting.

Chang's article focused on the fascinating physics behind graphene. "The hype is bigger," Carlo Beenakker, a professor of theoretical physics at Leiden University, told Chang, "because the physics is richer."

The commercial applications of graphene are just as exciting, entrepreneur John Lettow tells EQN. Lettow is part of a joint venture with Ilhan Aksay and Bob Prud'homme, both professors of chemical engineering at Princeton.

"It's terrific that top-flight physicists are pursuing this," said Lettow. "But graphene is not just an academic exercise. It will have a big, immediate commercial impact." According to Lettow, who graduated from Princeton Engineering in 1995 and did his senior thesis with Aksay, their company, Vorbeck Materials Corp., is the only company to be commercially producing graphene.

Lettow says that graphene is likely to eclipse carbon nanotubes, one of the hottest areas of nanotechnology. Graphene promises many of the same exciting applications as carbon nanotubes, which are costly and difficult to manufacture. "The real breakthrough is that Ilhan and Bob have found a way

to produce graphene cheaply," Lettow said.

Graphite, the most stable form of carbon on Earth, consists of many layers of graphene. Through a chemical process, Aksay and Prud'homme explode graphite into ultrathin individual sheets of graphene. The image above, captured by postdoctoral researcher Hannes Schniepp with an atomic force microscope, shows about 20 sheets of graphene. Each sheet is only a couple of nanometers high and 200 to 500 nanometers wide (to put this in perspective, the average human hair is about 40,000 nanometers wide).

You can read about research by Aksay, Prud'homme, and Je-Luen Li in this Nature news article. Aksay's work in nature-inspired materials was also mentioned recently in this issue of Technology Review. Find out about one of Prud'homme's many other research endeavors here.

AFM image: Hannes Schniepp

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Tags:

- American Physical Society
- atomic force microscope
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- Ilhan Aksay
- John Lettow
- materials science
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