

## Carbon: Graphyne created through organic chemistry

Continued from page 1A

using a chemical called acetylene, producing a specific variety of graphyne known as graphdiyne.

The large network is only five to six nanometers (five to six billionths of a meter) in diameter, but previously Haley's lab only created molecules one to two nanometers wide.

"I think that these substructures of carbon are probably the largest carbon-rich structures of that type that have been made," said Marsden, who has since earned his doctorate and has taken a job at Organic Consultants in Eugene.

Marsden said the process of synthesizing the molecule involved more than 20 separate steps, many of which involved using a metal called palladium to speed up reactions.

When a beam of light is zapped through a soda can or most any other solid item, the light will emerge on the other side in a straight line. Graphyne is unique in that, depending on the strength of the light, a light beam can pass through it and bend at an angle on its way out. Ultimately this work could be used in optical communications networks, which operate one million times faster than conventional electricity, Haley said.

Marsden said that because the carbon structures are about as large as they can possibly get, the next

steps will focus on adding different types of molecules to the graphyne molecules to produce different optical properties.

Haley also said graphyne could possibly be combined with lithium to improve batteries.

The existence and properties of graphyne were first predicted by computational chemists in 1987, Haley said. Another synthetic form of carbon, buckminsterfullerene (commonly known as buckyball), was also predicted before it was created.

"The nice thing about organic optical materials is that with organic chemistry, it is much easier to change or tune properties that you desire for a molecule," Haley said.

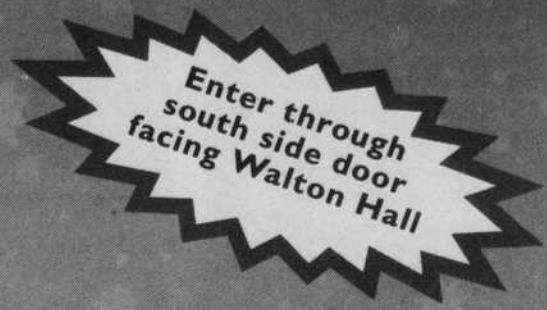
The difference between organic chemistry and inorganic chemistry is that organic chemistry works only with substances that contain carbon. This is not limiting for organic chemists because, when combined with other elements, carbon is present in every living creature.

"The organic chemist's toolbox has a lot more tools in it than somebody that's doing inorganic chemistry," Haley said.

The research was funded by a grant from the National Science Foundation.

Contact the business, science and technology reporter at [esylwester@dailyemerald.com](mailto:esylwester@dailyemerald.com)

UNIVERSITY HEALTH CENTER



## PLAN AHEAD FOR THE HOLIDAY BREAK

Health Center open through December 12.  
Health Center closed on December 13 and will reopen on January 9 to resume regularly scheduled hours.



**Hours for December 10 & 11**  
10 a.m. - 2 p.m.

**Hours for Monday December 12**  
10 a.m. - 4:30 p.m.

### DON'T FORGET:

- Fill your prescriptions
- birth-control needs
- low cost over-the-counter items



UNIVERSITY OF OREGON

<http://healthcenter.uoregon.edu>  
appointments: **346-2770**

**GOT A STORY IDEA?** give us a call at 346-5511.

OREGON DAILY EMERALD

# HELP SAVE WESTMORELAND STUDENT HOUSING & CHILDCARE CENTER

**Public Hearing**  
**Tuesday, December 6th - 7 PM**  
**EMU Fir Room**

Hearing will include public testimony, questions, and information regarding the University's attempt to sell the Westmoreland complex. All university and community members are invited to attend this important discussion concerning our university's future.



For more information visit:  
[www.savewestmoreland.com](http://www.savewestmoreland.com)

