



# Monthly Notices of the Everglades Astronomical Society



Naples, FL  
January 2011

**President:** Michael Usher; **Vice President:** Todd Strackbein; **Secretary:** Todd Strackbein;  
**Treasurer:** Bob Gurnitz; **Newsletter Editor:** Frank Ligas ( [EAS.Naples.NewsLetter@gmail.com](mailto:EAS.Naples.NewsLetter@gmail.com) );  
**Fak Coordinator:** Charlie Paul -- for information on viewing ( [cpaul651@earthlink.net](mailto:cpaul651@earthlink.net) , 239-410-8192 )  
**Webmaster:** Martin Zombeck ( [mvz@alum.mit.edu](mailto:mvz@alum.mit.edu) )

**Home Page:** <http://gator.naples.net/clubs/eas>

## President's Message

I hope everyone had a happy New Year! The new year starts out with a new club president, I have some mighty big shoes to fill but I will try my best.

Last month it was mentioned that a number of club members band together to build their telescopes resulting in lower overall cost and with the additional benefit of instruction from experienced telescope builders. I think this is a terrific idea; you don't need many tools to build a telescope and you can borrow what you do need from other members. If you build a truss tube telescope you can even transport it back and forth from your home up north with minimal space requirements. Please give it some thought.

Also needing some thought this year is how to spend several thousand dollars we have amassed over the years. There have been a number of suggestions made; I am inclined to favor those which benefit the club membership over a number of years over any one shot deals. Please also give this some thought and let us know your ideas at the next meeting.

We have a schedule change in our monthly presentation, Dennis Albright will be our speaker.

I'll see you on the 11th!  
Clear Skies,  
Mike Usher

## Dates for the "Fak"

Usually the best times to go out to the Fakahatchee Strand viewing site are moonless nights. Below is a list of upcoming Saturday nights that you will often find fellow club members out there enjoying the skies with you (weather permitting).

Fak Dates	Sun Set	Moonrise	Moonset
Jan 1	5:47 p.m.	4:43 a.m.	3:27 p.m.
Jan 29	6:08 p.m.	3:36 a.m.	2:17 p.m.
Feb 2	6:13 pm	8:22 a.m.	8:38 p.m.

## Next Meeting (Bring a friend!)

Jan 29, 2011  
Time 7:00 – 9 pm  
At the Norris Center, 755 8th Avenue South, Naples, FL

## Sky Events

Jan 4 -- New Moon  
Jan 12 -- First Quarter Moon  
Jan 19 -- Full Moon  
Jan 26 -- Last Quarter Moon

**Meteor Shower:** No major showers this month.

## Start Parties:

The 27th ANNUAL WINTER STAR PARTY  
February 28 - March 6, 2011  
<http://www.scas.org>

## Astronomical Trivia Question of the Month

What is a crystalline white dwarf?

- A white dwarf star that sparkles extra bright.
- A cold, frozen mass of iron, that was once a white dwarf.
- A frozen, extinct white dwarf star that is made of almost pure carbon.

*\*Answer on next page.*



## Astronomers Stumble onto Huge Space Molecules

by Trudy E. Bell and Dr. Tony Phillips

Deep in interstellar space, in a the swirling gaseous envelope of a planetary nebula, hosts of carbon atoms have joined together to form large three-dimensional molecules of a special type previously seen only on Earth. Astronomers discovered them almost accidentally using NASA's Spitzer Space Telescope.

"They are the largest molecules known in space," declared Jan Cami of the University of Western Ontario, lead author of a paper with three colleagues published in Science online on July 22, 2010, and in print on September 3.

Not only are the molecules big: they are of a special class of carbon molecules known as "fullerenes" because their structure resembles the geodesic domes popularized by architect Buckminster Fuller. Spitzer found evidence of two types of fullerenes. The smaller type, nicknamed the "buckyball," is chemical formula C<sub>60</sub>, made of 60 carbon atoms joined in a series of hexagons and pentagons to form a spherical closed cage exactly like a black-and-white soccer ball. Spitzer also found a larger fullerene, chemical formula C<sub>70</sub>, consisting of 70 carbon atoms in an elongated closed cage more resembling an oval rugby ball.

Neither type of fullerene is rigid; instead, their carbon atoms vibrate in and out, rather like the surface of a large soap bubble changes shape as it floats through the air. "Those vibrations correspond to wavelengths of infrared light emitted or absorbed—and that infrared emission is what Spitzer recorded," Cami explained.

Although fullerenes have been sought in space for the last 25 years, ever since they were first identified in the laboratory, the astronomers practically stumbled into the discovery. Co-author Jeronimo Bernard-Salas of Cornell University, an expert in gas and dust in planetary nebulae, was doing routine research with Spitzer's infrared observations of planetary nebulae with its spectroscopy instrument. When he studied the spectrum (infrared signature) of a dim planetary nebula called Tc 1 in the southern-hemisphere constellation of Ara, he noticed several clear peaks he had not seen before in the spectra of other planetary nebulae.

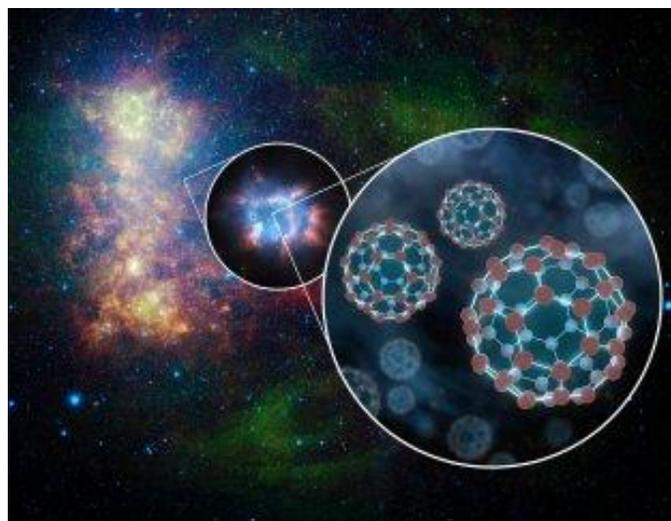
"When he came to me," recounted Cami, an astrophysicist who specializes in molecular chemistry, "I immediately and intuitively knew it I was looking at buckyballs in space. I've never been that excited!" The authors confirmed his hunch by carefully comparing the Tc 1 spectrum to laboratory experiments described in the literature.

"This discovery shows that it is possible—even easy—for complex carbonaceous molecules to form spontaneously in space," Cami said. "Now that we know fullerenes are out there, we can figure out their roles in the physics and chemistry of deep space. Who knows what other complex chemical compounds exist—maybe even some relevant to the formation of life in the universe!"

Stay tuned!

Learn more about this discovery at <http://www.spitzer.caltech.edu>. For kids, there are lots of beautiful Spitzer images to match up in the Spitzer Concentration game at <http://spaceplace.nasa.gov/en/kids/spitzer/concentration>.

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*



*Caption: Superimposed on a Spitzer infrared photo of the Small Magellanic Cloud is an artist's illustration depicting a magnified view of a planetary nebula and an even further magnified view of buckyballs, which consist of 60 carbon atoms arranged like soccer balls.*

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## Set For Launch

<http://www.nasa.gov/missions/highlights/schedule.html>

Space Shuttles Discovery and Endeavor will be the last two Shuttle flights. There are no flights scheduled this month.

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## Answer to the trivia question:

The answer is **C**. A frozen, extinct white dwarf Star that is made of almost pure carbon. Debates are waging as to whether they are made of diamond, or buckyball's

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# 2011 Membership Dues:

For the bargain price of only **\$20.<sup>00</sup> per family**, all this can be yours for the coming year!

- ✓ Meet with your fellow astronomy enthusiasts at least 10 times a year.
- ✓ Many opportunities to freeze/sweat/get bitten by mosquitoes in the Fakahatchee Strand.
- ✓ View planets, nebulae and many other celestial objects.

**Don't miss out!** Fill out this form (please print plainly) and send it with your \$20 check, payable to:

## **Everglades Astronomical Society**

P.O. Box 1868

Marco Island, Florida 34146

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_