

Vol 34 No. 4

Renew now for 2018. Don't let your membership expire. See page 3 for details.

President's Message

By Patrick Donnelly

It is a new year here at Fremont Peak. This New Year has brought many changes to the Fremont Peak Observatory Association (FPOA). I have been elected president of FPOA, replacing John Parker. I want to thank John for all of his efforts the last two (2) years. John has been integral in moving the organization forward, and he has been a major contributor to the west deck project. He has volunteered his time and has been at all of the construction work parties for the west deck. In addition to stepping down as president, John will leave the FPOA Board proper but will continue as an alternate board member. Thank you John for all the work you have put into the FPOA the past few years.

It is hard to believe but FPOA has been conducting the summer programs for 32 consecutive years. On my first visit to the peak in 1986 I watched the observatory being dedicated. Now here it is 32 years later, and the organization is as strong as it ever has been in the past. The organization has evolved a lot in 32 years, and we still have our core activity (public observing programs) intact. Over the years we have added other activities including solar programs, special programs for schools, churches, and scout groups, an intern program, and a participating program with NASA to collect meteor trajectory data. Here's hoping for another 32 years.

At the January 13, 2018 board meeting, new officers for the FPOA were elected. These include:

President – Pat Donnelly Vice-President – Chris Angelos Treasurer – Rob Hawley Secretary – Ric Babcock Winter 2017

2018 FPOA Program Dates

Saturday Evening Programs

Apr 7, 14, 21May 5, 12, 19Jun 9, 16, 23Jul 7, 14, 21Aug 4, 11, 18Sept 1, 8, 15Oct 6, 13

Solar Programs

Mar 24 Apr 7 May 5 Jun 9 Jul 7 Aug 4 Sept 1 Oct 6

Board Meetings

Jan 13 Feb 17 Mar 24 Apr 14 May 12 Jun 16 Jul 14 Aug 11 Sept 8 Oct 6 Nov 10 Special Events

Annual Meeting / BBQ Sept 8

Please check <u>http://www.fpoa.net/schedule.html</u> for changes or updates to this schedule.

CARBON – THE ONLY BASIS OF LIFE IN THE UNIVERSE?

By Patrick Donnelly

One of the most intriguing questions in science is this – "Is there life in the universe beyond the Earth? For me it appears inevitable that life beyond the Earth will be discovered, and as such, what element will be the chemical basis of that life?

First, in order to understand why carbon is the only

Continued Page 2

Carbon

from Page 1

choice as the basis of life, the definition of life needs to be given. (I want to thank Rob Hawley for his input here.) There are seven (7) parameters or qualities that describe all life on Earth:

- Stability (Homeostasis) a relatively stable state between the different groups of components of an organism. This means that any life form has all parts of its body working together
- Structure any organism has to have structure on the molecular level and macro level
- Metabolism the organism must be able to convert chemicals and energy into usable substances and components that are used to sustain the organism
- Growth the organism must be able to grow in order to function more efficiently
- Irritability the organism must be able to respond to stimuli
- Adaption the organism must be able to change as the external environment changes
- Reproduction the organism must be able to reproduce itself

Using these criteria it becomes obvious that any entity such as a crystal or a chemical phase change would not qualify as life. Life must consist of very large and complicated molecules, in order to do all of the above activities.

To see why carbon is by far the preferred element for the basis of life, let us begin our examination by considering the relative abundance of various elements in the universe. Except for Helium and Neon, which are inert noble gases, the four most abundant elements in the universe are Hydrogen (H), Oxygen (O), Carbon (C), and Nitrogen (N). Relative to Chlorine (relative abundance 1) below are listed the relative abundances in the universe of some elements:

Hydrogen – 75,000	Sulphur – 50
Oxygen - 1,000	Chlorine – 1
Carbon -500	Phosphorus – 7
Nitrogen – 100	Arsenic – 0.008

Because of their relative abundance it is much more likely that big molecules would synthesize out of H, C, O, and N than the other elements. In fact, over 80 % of all known molecules consist of only these four (4) elements. One interesting fact on relative abundance is this. There is much more Silicon (Si) in the earth's crust than Carbon, but no Si life forms have ever been identified in the Earth's crust. For elements heavier than Chlorine the relative abundance all but precludes their possibility, since most of these elements are synthesized in extremely rare neutron star collisions.

Probably the most important aspect of carbon that would lead one to conclude that Carbon is the only potential basis of life is its chemistry. The Carbon – Carbon molecular bond is one of the strongest chemical bonds that exist. As evidence of the strength of the Carbon – Carbon bond one needs only to consider the strength of diamonds and carbon fiber. These are extremely strong materials that consist of essentially only carbon. This strong bond allows Carbon to form the very large molecules and rings, which are necessary to form large organic molecules. No other element has the capability to do this.

Next one needs to consider astronomy. When one looks out into space, what kinds of molecules are found? Many different types of organic and nonorganic molecules are found in space. However, for all molecules found in the Interstellar Medium (ISM) that consist of six (6) or more atoms, only the elements H, C, N, and O are found in them. In fact, all of these six (6) atom or greater molecules would be chemically classified as organic. The amino acid Glycine has been found on two (2) comets and possibly in the ISM, and the organic molecule Chlorobenzene has been discovered on Mars, and of the several hundred molecules found in space almost all of them are carbon based organic molecules. To date no large, complicated molecules based upon any other element have been discovered in space.

One final piece of evidence comes from the various space programs and earth based observations searching for life. All of the efforts directed at looking for life elsewhere in the universe have been directed at searching for carbon based life. I am not aware of any efforts to date to look for exotic life forms based on any other element other than Carbon.

Let us conclude this discussion by saying that one cannot absolutely exclude the possibility of life based upon another element, other than Carbon, exists elsewhere in the universe. However, no evidence to date has been found to suggest that any other type of life exists either on Earth or elsewhere in the universe. When Stephen Hawkings was asked if life is found beyond the Earth, would it be Carbon based. His reply was, "Probably." I guess that is the best one can say at this time.

West Deck Progress Report

By Daniel Dynneson

After a long summer of work, the construction of the west observatory deck is pretty much complete. The only outstanding part of the new project is the stairs. Recent progress on this item has been curtailed by unstable weather. Fremont Peak Observatory acknowledges contribution from the following people: John Parker for coordinating help and supervising the painting project, the Hollister boy scouts and their parents, Greg Bosler for design work and physical labor, and a number of Fremont Peak members and board members, including Rob Hawley, Pat Donnelly, and Chris Angelos, Rhonda Dynneson. We also express gratitude to the state parks for design approval and removal of old deck material.



L. to R. Greg Bosler, Sal Ascencio, Rob Hawley, Steve Loos, Zack Loos, Pat Donnelly, Loren Dynne-



Boy Scouts Troop 455 Hollister L. to R. Jake, Zach, Eric, Evan, Eric, Ramon



L. to R. John Parker, Rob Hawley, Chris Angelos, Loren Dynneson



To Left: West Deck in Twilight

2018 Membership Renewal

Renewals are easy. You can use the forms on the membership page <u>http://www.fpoa.net/</u><u>membership.html</u> to pay with either PayPal or via a credit card. For those preferring paper you can just send a check (that has your current correct address) to : FPOA Membership, c/o Rob Hawley, 1233 Hill-crest Dr., San Jose CA 95120

If your email has changed, then please be sure to include that in either the PayPal payment as a comment or a note with your check.

President 's Message

From Page 1 Ron Dammann has agreed to remain the Director of Instruments and Director of Programs. In addition to the officers FPOA has a new board member. I would like to welcome Sal Ascencio to the FPOA Board. Sal will fill the board spot vacated by John Parker.

Astronomically 2018 will be banner year for observing the heavens. All four (4) of the bright planets, Venus, Mars, Jupiter, and Saturn will be well placed for observing for much of the observing season and should put on a very good show for the public. Mars, which will be located between Saturn and Jupiter in the sky, will be the closest and brightest it has been in 17 years. Mars reaches opposition on July 26. Hopefully the views of Mars will be as good as they were 17 years ago. Venus will be bright in the western sky until October, and even Mercury will make a better than average appearance in the early summer. The Perseids should put on an excellent show with the moon well out of the way. There will also be plenty of time for deep sky observing. The year 2018 is the year to come to the peak.

Accessing Members Only Page

Several years ago our member's only information used to be accessed with the URL <u>http://members.fpoa.net</u>. Due to some technical problems with the host we moved to several years ago we have never been able to get that to work.

Members information can now be accessed at <u>https://</u> fpoa.net/members.html. The https is required!

FPOA on the Internet

Phone Number:	831-623-2465
Email Address:	info at fpoa.net
Website:	www.fpoa.net
Members Only Page:	https://fpoa.net/members.html

 Facebook:
 www.facebook.com/fpoa.observatory/

 Twitter:
 twitter.com/fpoa_info.

EMAIL DELIVERY OF THE OBSERVER

Dear FPOA Members,

We have been delivering the Observer via email for the past several years. This obviously saves the Association postal expenses, and assures the quickest delivery to you. However, several of you no longer have valid email addresses, due to ISP changes, moves, etc. If you would like to continue to receive, or begin to receive, notification of the Observer via email, please send your current email address to membership at fpoa.net

Fremont Peak Observatory Association PO Box 1376, San Juan Bautista, Ca. 95045

Observatory 831-623-2465

Officers	and Directors-	-2018
----------	----------------	-------

President	Pat Donnelly 408 778-2741 kungfugina at aol.com
Vice President	Chris Angelos 831 688-3562 chris.angelos at plantronics.com
Secretary	Ric Babcock 831 262-2223 gentlehart at gmail.com
Treasurer	Rob Hawley 408 997-6526 treasurer at fpoa.net
Directors	Sal Ascencio 408-636-3907 s_ascencio at hotmail.com
	Ron Dammann 408 255-1863 schedule at fpoa.net
	Daniel Dynneson 831 269-3544 <i>Dynnesond at gmail.com</i>
	Loren Dynneson 831 443-8631
	Becky Snow puffmuffin25 at yahoo.com
Director of Instruments	Ron Dammann 408 255-1863 schedule at fpoa.net
Membership and Newsletter Distribution: Rob Hawley treasurer at fpoa.net	
Website	Rob Hawley
Directors Emeritus Kevin Medlock Denni Medlock epoch at majornet.com	
The <i>Fremont Peak Observer</i> is published four times a year (Winter, Spring, Summer, Fall). Articles from members are encouraged and should be emailed to <schedule at="" fpoa.net=""> Articles should be in plain text or MS Word format. Deadlines are Feb. 1, May</schedule>	

1, Aug. 1 and Nov 1, respectively.