



# American Chemical Society Wichita Section

September, 2017 Newsletter

Stephen Donnelly, Editor

**Section Meeting**  
**Friday, 6 October**  
**Emporia State University**  
**Emporia, KS**

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**Meal:** 6:30 p.m.

**Presentation:** 7:30 p.m.

We will meet for dinner in the Phi Kappa Phi room in the Memorial Union on the Emporia State University Campus. The meal will include a garden salad, pasta with choice of marinara or Alfredo sauce, vegetables, and brownies for dessert. The cost of the meal is \$11, \$7 for students, and gratis for high school teachers. We ask those interested in joining us for dinner to RSVP to Diane Nutbrown by email to [dnutbrow@emporia.edu](mailto:dnutbrow@emporia.edu) by Thursday, 28 September. The presentation will be given in the same room starting at 7:30 PM.

A map of the ESU campus can be found at <https://www.emporia.edu/campus-map/>

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### Zoom to the Meeting

Can't make the trip to Emporia for the speaker's presentation? Watch it online! The meeting will be broadcast via Zoom video and web conferencing. To join from a computer (PC, Mac, Linux, iOS, or Android) use the following link.

<https://emporiastate.zoom.us/j/451998771>

You will need to download the Zoom application to connect to the meeting.

Alternatively, you can connect by phone by calling either of the following numbers.

646-558-8656 or 669-900-6833

The meeting ID is 451 998 771.

Access to the video and audio conference will began at 7:20 PM.

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**Speaker:** *Dr. Paul Philp, Professor Emeritus, School of Geology and Geophysics, University of Oklahoma*

**Title:** *The Fracking Revolution in the Oil and Gas Business and its Implications from both the Environmental and Energy Perspectives*

### Abstract:

Hydraulic fracturing, or fracking as it is more commonly known, has become a despised term in many quarters, but most people do not look at both sides of the process but simply see it as a blessing or a curse. In my opinion it can be both but there is a need for better communication on both sides and not the general mass hysteria that accompanies such discussion. In this presentation I will try and outline some of the issues on both sides of the argument. These are simply my opinions backed up as far as possible by published data.

First a little history, not many people realize that the first patent for fracking was issued back in the 1850s during the Civil War and applied to water wells to improve supply of fresh water for the soldiers. There were various attempts at fracking oil and gas wells during the 1920s and 30s with limited success. After that in the 50s and 60s many vertical wells were successful fracked with little attention from people outside the industry. However it was in the 1990s and the first decade of this century that fracking started to gain attention. The first big shale gas development was in the Fort Worth Basin, TX. Mitchell Energy desperate to find gas in the basin finally successfully developed the technique of horizontal drilling around 2000 after many failed and expensive attempts. The real breakthrough coming with the combination of horizontal drilling and fracking leading to significant gas production from the Barnett and later many oil source rocks long thought to be past prime.

So what are the major environmental problems? The first is the water issue-fracking a well requires large amounts of fresh water, a precious resource in states such as Texas, Oklahoma and California where there are steady droughts and water could be used for other purposes. This issue is being addressed and alternative techniques are being developed. Second the concern that gas will get in water wells. This has been happening in oil and gas producing regions for years and has not been shown to cause health issues. Numerous papers were published a few years back suggesting fracking was responsible for this and these papers were later found to be false and some were retracted. Third

chemicals from the fracking operation will get into the aquifers and water wells. This is indeed a concern but many studies have shown a limited number of occurrences and few health related incidents. Fourth-damage to the environment in rural areas. That is a problem, huge storage pits have to be dug for water storage and new roads for rig transport. Fifth earthquakes are another big problem but not directly related to the fracking. The earthquakes are caused by disposal wells where salty formation water is reinjected into very deep formations, subsequently causing the earthquakes.

Finally I think one has to ask the question: why would the oil companies want to intentionally fracture the ground water aquifers? By doing so they would only produce water and that is not their goal.

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### Speaker Bio:

Dr. Philp received his B.S. from the University of Aberdeen, Scotland, and his Ph.D. and D.Sc. from the University of Sydney, Australia in 1972 and 1998, respectively.

His research interests are centered on the study of organic material as it is deposited in the sedimentary environment and undergoes a number of changes resulting from diagenesis, microbial degradation, and thermal maturation at higher temperatures in older sediments. Particular attention is given to studying the fate of individual organic compounds that can be related to specific sources of organic material and used to provide information on the type of hydrocarbon products a source rock will produce, its maturity, whether an oil has been biodegraded, and relative migration distances of oils. In addition, biomarkers have been shown to be useful in basin modeling studies. Development of pyrolysis techniques for the characterization of the insoluble organic matter in a known source rock is another area of research.

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### Election

The Wichita Section will hold an election this fall to select four new members for its leadership team. The open Executive Committee position are Secretary, Treasurer, Councilor, and one of the three Members-at-large. Each position is for a three year term beginning 1 January, 2018.

Candidate nominations may originate with any member or affiliate of the Wichita Local Section. Please note that nominees must be an ACS member, their nominations must be seconded by a section member, and the nominees must agree to be on the

ballot. You may nominate any number of candidates, and can nominate more than one person for the same position. An online nomination form is available at the following web site.

<https://tinyurl.com/y8xbvlpf>

Alternatively, a link to the nomination form can be found at the ACS Wichita Section web site listed below. Simply complete an online form for each individual nomination. Descriptions of the open positions are given in that same form. All nominations must be received by October 15, 2017. Confirmed nominees will be asked to provide a brief biography to be included with the ballots distributed in late October, 2017.

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### Notice of Updated By-laws

After a unanimous vote at our February local section meeting supporting the proposed changes to our bylaws that allowed electronic voting for elections and separated the secretary position from the succession to chair, the ACS Committee on Constitution and Bylaws has certified our revised document, which can be referenced at the ACS Wichita Section web site listed below.

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### Midwest Regional Meeting 2017



The 2017 ACS Midwest Regional meeting, sponsored by the Wakarusa Valley local section, will be held on the KU campus on October 18-20. Check out <http://mwrm2017.sites.acs.org/> for more information.

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### National Chemistry Week



NCW encourages ACS members and science enthusiasts to build awareness of chemistry at the local level. ACS local sections, schools, businesses, and individuals are invited to organize or participate in events in their communities with a common goal: to promote the value of chemistry in everyday life.

To that end, the Wichita Section has established a small fund to assist those willing to develop and host a NCW event. The money can be used to buy supplies and for advertising the event, but is not intended for refreshments and/or meals. The funds will be available on a first-come, first-served basis. For additional information or to apply contact Dr. Robin Jackson via email at:

[robin.jackson@centralchristian.edu](mailto:robin.jackson@centralchristian.edu)

or by phone at 620-241-0723 ext. 355.

Additional information, including ideas for celebrating National Chemistry Week, can be found at the following web site

<https://tinyurl.com/y9ozhjdb>

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### NCW Local Event



#### JOIN THE FUN: CHEMISTRY ROCKS

Central Christian College in McPherson will be hosting a free, interactive, hands-on experience for students of all ages to learn about the chemistry of rocks and minerals.

We are surrounded by rocks and minerals everywhere - in the ground we walk on, the places we work and live, and even in the food we eat. This even will look at how chemists are experimenting with these fundamental materials to help the world, and make our lives better.

When: Tuesday, October 24, 2017 from 6:00 PM to 7:30 PM.

Where: Mingenback Science Hall on the campus of Central Christian College in McPherson.

RSVP: To Dr. Robin Jackson by October 18 (space is limited) at 620-241-0723 ext. 355

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### ACS Midwest Regional Meeting, 2019

The Wichita Local Section will be hosting the 2019 Midwest Regional Meeting on October 16<sup>th</sup> to the 19<sup>th</sup>. We are in the planning phase and will certainly welcome anyone who may wish to volunteer to help make this event a success. We will also be looking for vendors or anyone else who would like

to rent an exposition booth during the event. Please contact either Dr. Paul Rillema or Dr. Arvin Cruz, who will be co-chairing this event. Their contact information is listed below.

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### \*\*\* Save the Date \*\*\*

The Wichita Section will be hosting a social event at the Kansas Cosmosphere on Saturday, December 2<sup>nd</sup>. This will be a come-and-go event starting at 4 PM with snacks and drinks available between 4 and 6 PM. Participants will have access to the Cosmosphere's attractions during that time as well. A movie will be presented at 6 PM for those interested. We are still working on the details of the event (cost, menu, and movie title), and we will include that in next month's newsletter.

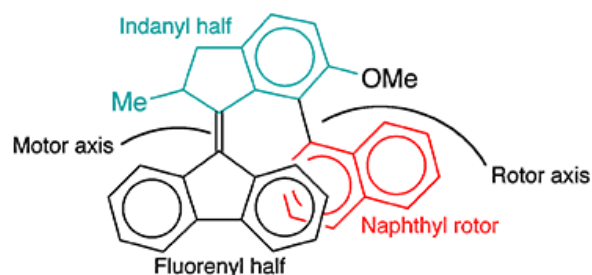
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### High School Science Teacher Outreach

The Wichita Section is making an effort to improve our connection with high school science teachers at schools within the section. If you know a science teacher who might be interested we encourage you to invite them to one or both of our upcoming functions. As noted above the section will cover the cost of the meal at the meeting, and the cost of attendance at the Cosmosphere event. For additional information about this outreach effort contact Norman Schmidt at [normans@tabor.edu](mailto:normans@tabor.edu).

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### Molecule of the Week



The term "molecular motor" was introduced in the 1990s to describe protein "machines" that produce motion at the cellular level. At the same time, chemists initiated attempts to "build" molecules that, upon input of energy, performed work, typically rotating a portion of the molecule. The energy could be in the form of heat, light, electricity, or chemical reaction.

One of the first researchers to create molecular motors was Ben Feringa at the University of Groningen (The Netherlands). In 1999, he and his co-workers reported the synthesis of a photochemically driven molecular rotor. Last year, he and two other

chemists were awarded the Nobel Prize in Chemistry for their pioneering work in this field.

Earlier this year, Feringa and colleagues created a more complex machine: a molecular motor coupled to a rotor. The molecule, shown in the image, consists of a tricyclic fluorene group attached to a bicyclic indane via a double bond (the “motor axis”). The other ring of the indane is attached by a single bond (the “rotor axis”) to bicyclic naphthalene.

UV (365 nm) irradiation of the molecule at –60°C induces the double bond to isomerize and cause the indane–naphthalene moiety to rotate around the fluorene. The stereochemistry is such that only one side of the naphthalene ever faces the fluorene.

Feringa’s next objective is to “create machines that can amplify the molecular machines’ motion to larger movements or transmit motion over longer distances.”

Learn more about this week’s molecule from the CAS REGISTRY, which is searched using SciFinder®. Each record displays the registry number, index name and synonyms, bibliographic information, and more.

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### ACS National Event



**November 15-16, Washington D.C.**

The ACS Entrepreneur Summit is an event for startups, small businesses, investors, corporate partners, government officials, students, professors, researchers, and journalists who wish to gain:

- Opportunities to network with entrepreneurs, private investors, and corporate innovators.
- Greater insight into interests, trends, opportunities, and challenges in chemical entrepreneurship.
- Practical advice and information for chemistry-based startups and small businesses
- New ways of approaching operational challenges, value proposition, and customer development.

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## 255<sup>th</sup> ACS National Meeting and Exposition Nexus of Food, Energy & Water

March 18-20, 2018

New Orleans, LA

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### Wichita Section Web Site:

<http://wichita.sites.acs.org/>

### 2017 Section Officers

#### Dr. Diane Nutbrown, *Chair*

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