

September 2014

## Inside this issue:

[Try This At Home \(Part 1 Teaser\)](#) 1

[2 Upcoming Distinguished Lecturers hosted by the Magnetics Society](#) 1

[Good Food, Good Company, and Good Work](#) 2

[Upcoming Dine and Learn Event for November](#) 2

[A Visit to Section's Congress](#) 3

[Grand Opening of Denver's U.S. Patent and Trademark Office](#) 4

[Saving the World One House At A Time](#) 4

[Try This At Home \(Part 2\)](#) 5

[Coming to Denver October 2: The First Inventor to File](#) 6

Official newsletter of IEEE-Denver Section  
Published Quarterly

Editor:

Submit articles for consideration to:  
[hasling@ieee.org](mailto:hasling@ieee.org)

Leveraging Technology  
for a Better Tomorrow  
**IEEE Day**  
7 October 2014

Watch the **1:30 min video!**

#IEEEDay2014 #Gofor5

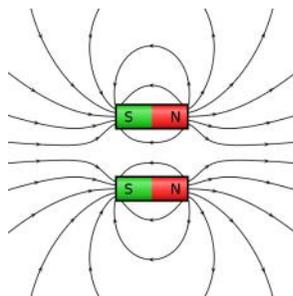
## Try This At Home

Magnets have always fascinated me. Repulsion (between like poles) and attraction (between unlike poles), and the “action-at-a-distance” behaviors seem almost magical. My hobby of “Hands-on Science” experiments have enlightened and entertained countless bored youngsters (of all ages, from 2 to 92), while waiting for a bus, or an airliner to arrive.

**Question One:** Using household refrigerator magnetic strips in pairs, how can you reuse them with destroying them?

**Question Two:** Can you turn an ordinary magnet into a magnet that is twenty times stronger?

[Read more on Page 5...](#)



## Next Distinguished Lecturer hosted by the Magnetics Society

### Topological Effects in Nanomagnetism: From Perpendicular Recording to Monopoles

Thursday, October 9th, 5:15pm

Center for Community (C4C), Meeting Room S435 on the CU Boulder campus

Hans-Benjamin Braun, School of Physics, University College Dublin, Ireland will cover an overview of topological defects in magnetic systems including quantum effects such as quantum spin circles and magnetic monopoles interacting as dipoles or artificial spin ice. Such formations occur in 1D strings and could be used in data storage and memory applications.

### Magnetic Materials in Medicine: Applications in Diagnosis, Management, and Treatment of Disease

Thursday, September 25th, 5:15pm (completed)

Tim St. Pierre, School of Physics, The University of Western Australia, Perth, will be discussing physical and chemical principles behind biomedical applications to assess and identify infections specifically iron in the blood including the development of synthetic magnetic particles that can be injected into the body to enhance magnetic resonance images and act as heat sources for drug treatment.

## Good Food, Good Company, and Good Work



Back in August the IEEE Denver Section had a great turn out for the annual BBQ to welcome in the new school year. There were lots of new faces, some from local student chapters and others from technical societies. The special treat for the event was that the guest speaker was Jim Jefferies, the President-Elect for 2014, President for 2015! (He says “Thank you for your votes.”) How special to have an influential voice coming from right here in our home town.

Jim talked about the importance of volunteering. The thing about volunteering is that it doesn't matter how much time energy, or enthusiasm you have to give, it is always welcomed! Jim admitted that he didn't start volunteering until later in his career and look what that passion turned into!

If Jim's story inspired you, check out these links for more information and opportunities to become a volunteer with IEEE yourself:

- Join the [IEEE Denver Section](#) ExCom 2015
- Join the committee board of [ComSoc Technical Society](#) or [Signal Processing Technical Society](#)
- Become a speaker at Cloud Over the Rockies Symposium or [Dine and Learn Event](#)
- Support your local teams and watch them compete like at [Robotics Technical Society](#)
- General [IEEE.org](#) volunteering

Whether you are active in IEEE ExCom, are a chair of a technical society, or just a paying member, we thank you for being a part of something that we think is pretty great. If you want to get more involved, you know where to find us! And if you just want to enjoy the many hard (and not-so-hard) work of our volunteers by attending our events we would love that even more! Take advantage of the monthly volunteering efforts we have put together for you. Try something new, meet some new people, learn something new by listening to a distinguished lecturer. Oh, and thank you for being a reader of our newsletter! :-)

-Krista Hasling



**Now the first Tuesday of the month!**

Attend the next Denver IEEE ExCom meeting at:

DeVry University      1870 West 122nd Ave Room 121

Tuesday, October 7th

6:00 pm—8:30 pm

## Upcoming Dine and Learn Event for November

Come join your fellow IEEE members and local engineers for a fun-filled evening of appetizers, networking, and dinner, while we discover exciting new innovations in technology. Once a month one of your local Denver IEEE Societies will host the event and bring in a unique speaker related to their field to present. This provides you, our members, with a unique opportunity to explore and learn about exciting new technologies being developed around you. Early on in the evening you'll also have ample opportunity to mingle with your fellow engineers and colleagues, delving into a broad range of technical expertise. Events are held the 2nd Tuesday of the month from 6:00 to 9:00 pm. We'll be providing plenty of delicious appetizers to accompany the networking hour, but dinner is on your own dime while we settle into the evening's presentation. If you're an IEEE student member, just let us know and your dinner is on us. Watch for our upcoming e-mails with details about each event and location. We've already hosted many of these successful events this year and are scheduled for the remainder of the year. We are actively looking for speakers for the 2015 series, so please contact us if you have an exciting topic to talk about. Browse the list and don't hesitate to contact us with any questions. We hope to see you there!

-Marc Kessler

- 9/9/2014 (completed) - Recent Trends in Cloud Computing
- 10/7/2014 (completed) - EMI and Medical Instrumentation
- 11/11/2014 - A WCDMA introduction - How do those phones work?

## A Visit to Section's Congress

Every three years, leaders from each IEEE section around the world meet to discuss the future priorities of IEEE and receive leadership training to bring IEEE benefits to you. This year the meeting was in Amsterdam, and as the Denver Section chair I got to attend. This year's theme was "Inspiring the Leaders of Tomorrow". Young professional leaders from all over the world attended 3 days of meetings and interactive sessions on enhancing member's satisfaction, improving the volunteer experience and having a global reach with a local touch. The conference left leaders energized about both the future of IEEE and how IEEE is continuing to evolve and better serve its members, the technical community and the world.

Each section and region around the world worked together to compile a list of recommended changes they would like to see IEEE make in the next 3 years. Through a selection process, the recommendations were narrowed down to 34 ideas which represent the favorites from around the world. Throughout the conference, sections delegates were able to vote on their top picks and the final 5 recommendations that will be presented to the IEEE Board of Directors for consideration are:

- 1) Include free access to IEEE Digital Library and other IEEE services as a member benefit. (Google Business Model).
- 2) Develop an incentive and recognition program for companies that invest in their employees' IEEE membership dues.
- 3) Introduce loyalty rewards such as publication access, conference fees, standards for continued membership.
- 4) Provide a tool to build, promote, record, host and broadcast technical events at the local level.
- 5) Enhance vTools for better usability by volunteers and provide a training program to the Sections.

It will be exciting to watch how IEEE takes these recommendations and turns them into change in our organization. Many great changes have already resulted from this process including a long-term strategy for increasing the number of next-generation youth pursuing science and engineering careers, a loyalty program rewarding members for their years of membership and service, increased support with grants for students wanting to attend conferences and organizing technical competitions and the development of a leadership training handbook for section officers. The point in telling you about previous successes is to share that constant changes happen to the organization just for you! I promise as your chair to keep you informed and I hope you enjoy the fun events the Denver Section has planned! - Jennifer Carroll, 2014 Chair



## Saving the World One House At A Time

On October 12th in San Jose, California, Rob Melich, a Louisville-based IEEE member, will present "Designing and Developing Sustainable Housing for Refugee and Disaster Communities" at the [IEEE Global Humanitarian Technology Conference](#).



Rob and Stuart Ohlson, Denver Architect and creator of the HHI House© (pronounced Hi!), will share their experience designing, building, and prototyping the structure that improves the lives of millions of families across the world, families who lost everything due to natural disasters or war.

HHI House prototypes are on display at Denver's Sustainability Park at [24th and Lawrence](#). Members who would like a tour of the HHI House or have an interest in the project may contact [Rob](#). [Click here](#) for more information on the project and the Humanitarian House International volunteer team.

- Marc Kessler

## Grand Opening of Denver's U.S. Patent and Trademark Office

The Grand Opening Ceremony of [Denver's Rocky Mountain Regional Office](#) of the [U.S. Patent and Trademark Office \(USPTO\)](#) was held on June 30, 2014. Prior to attending the ribbon-cutting ceremony in the morning, I was treated to an informal tour of the new office, which occupies the 14th and 15th floors of the Byron G. Rogers Federal Building at 19th and Stout. I got to see the 14th floor offices, the courtrooms of the administrative patent judges (APJs), and a public search room. The building also houses the Collaboration Center, which is designed to enable educators, inventors, entrepreneurs, and the intellectual property (IP) community to collaborate and use USPTO resources. The 15th floor houses more offices and a 25-seat training facility with a video link to the training facilities at USPTO headquarters in Alexandria, VA. Eventually, the office will house 100 patent examiners (PEs), 20 APJs, and their support staff, including a Deputy Director for Outreach. Currently, the office houses about 50 PEs, with the next group of 25 PEs coming on board and beginning their training on October 6.



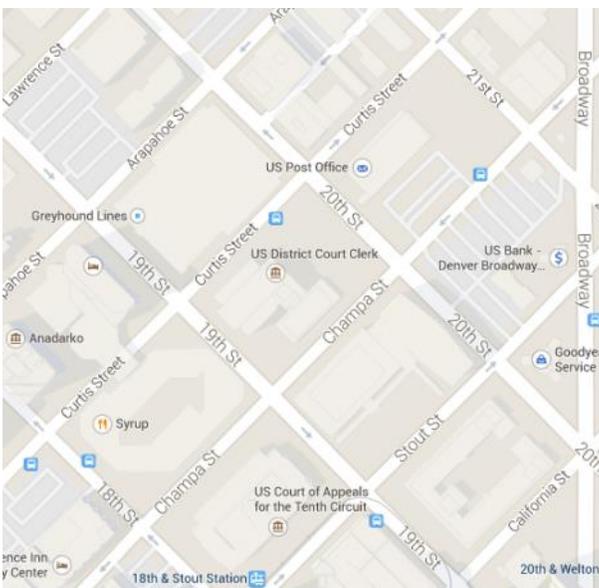
That morning, I met Russell Slifer, the newly-appointed Director of the Rocky Mountain Regional Office. He was a design engineer for Honeywell and has been a member of IEEE for more than 20 years. Although Russ has practiced intellectual property law for the last 20 years, he is an engineer at heart. I talked to him for about 20 minutes at the evening gala about various engineering, IP, and local topics, but I had no idea he was a lawyer until I looked at his bio!

The Grand Opening Ribbon Cutting ceremony featured Colorado's congressional delegation, including Sen. Mark Udall and other Washington dignitaries. Some highlights were Sen. Bennet's comments on the history of innovation in Colorado, including Nikola Tesla's experiments with atmospheric electricity in Colorado Springs. Steve Katsaros of Nokero spoke on how his solar light bulb is providing light to people in the third world, reducing their need for dirty kerosene lamps to provide light (Nokero stands for NO KEROsene).



Rocky Mountain Regional Office ribbon cutting ceremony with Steve Katsaros, Commissioner for Patents Peggy Focarino, Acting Deputy Secretary Bruce Andrews, U.S. Senator Michael Bennet, Deputy Director Michelle Lee, Denver Mayor Michael Hancock, U.S. Senator Mark Udall, U.S. Representative Ed Perlmutter, Chief Judge James D. Smith.

Next, there was a formal swearing-in ceremony of the APJs conducted by the Chief Judge, James Smith. The ribbon was cut by Michelle Lee, Deputy Under Secretary for Intellectual Property and USPTO Deputy Director. The Grand Opening Gala followed at a familiar location—Wings Over the Rockies. Nearly 50 tables were set up on the floor of the museum. Dining among the planes, what a treat!



There was a brief program emceed by Phil Weiser, Dean of the University of Colorado Law School. And then we were left conversation among ourselves about various topics. I was lucky enough to be at a table where I was involved in a discussion of engineering, patent law, and the Denver Office with Russ Slifer (Director), James Smith (Chief APJ), Sarah Harris (General Counsel for the USPTO), and others.

Afterwards, waiting for the shuttle to downtown and light rail, I shared a laugh with the event coordinator for Wings. As I talked to him, I mentioned that Richard Rew, a long-time volunteer at Wings, was a member of the IEEE Denver Executive Committee. He had trouble placing Richard in that role and wasn't sure we were talking about the same person. Then I thought about the fact that Richard never misses an opportunity to show kids his origami frogs and how to make them jump. So, I told the event coordinator, "Yeah, Richard Rew, the guy with the origami frogs." He recognized him immediately!

-Valerie Schlecht

## Try This At Home (cont.)

**First:** Would you like to demonstrate how to remove the magnetic strips of any pair of common refrigerator magnets typically glued onto your new phone directories?

Free refrigerator magnets advertise local plumbers. The advertising paper is strongly attached to the thin, flexible ferrite magnet sheet, so don't waste your time, trying to remove the paper. Luckily, two beads of rubber cement, which adhere the magnet layer to the phone directory, are easily removed (by design).

Refrigerator magnets of that design are remarkably weak, and will rarely hold even two pieces of paper, to your steel refrigerator door. In spite of their intended deficiencies, such sheet magnets are free, and can be handed out, to any unsuspecting bored bystander, to encourage people to become just a bit more curious.

Most people have never been curious enough, to take two flat sheet refrigerator magnets, flip one over, and then try sticking the two dark ferrite sides together. A little tinkering might surprise even you. In most random orientations of the two ferrite magnet sheets, they will not stick strongly to each other. However, when performing a slow rotation (no more than 90 degrees) of one of the flat ferrite sheets, one will suddenly adhere strongly to the other flat ferrite magnet sheet.

Further tinkering will soon disclose two behaviors: When one ferrite sheet is slid slowly across the other ferrite sheet, friction is can be relatively low, in one narrow (within less than one degree) direction only, following stripes of north and south poles. If slid in any other direction, you will feel a "cogging," a series of jerks, as each north stripe leaves the matching attracting south stripe, hops over a repelling north stripe, then catches onto the next attracting south stripe.

If you happen to have only one, flat refrigerator magnet, then you can easily slice it in half, or even into many smaller sheets, with ordinary scissors. The pitch of the magnetic stripes are typically about one millimeter apart, between each north magnetic stripe and the adjoining south magnetic stripe. Online, you can purchase "Magnetic Viewing Paper," which can display those magnetic stripes, as bright green lines on a dark green background.

**Second:** Would you like to demonstrate a secret way to make an ordinary magnet at least twenty times stronger?

In a typical kitchen, cabinet doors are held in the closed position, by magnetic catches. If you study one, you will discover a rectangular ferrite magnet, sandwiched between two rectangular steel "pole-pieces," contained (loosely) inside a plastic housing, that is screwed onto the cabinet's frame post. As the cabinet door pivots towards the closed position, a steel target (screwed onto the edge of the door) approaches the stationary magnet, and suddenly catches strongly. If you were to take one apart, and then separate the steel pole pieces from the ceramic magnet, you will find that magnet is only a few millimeter thick, polarized on the flat sides, and is remarkably weak. That cheap ferrite magnet, by itself, could easily pick up steel paper clips, but not much that is heavier. However, if you restore the rectangular pole pieces to their correct positions onto the flat sides of the ferrite magnet, you will find that the assembly can lift something as heavy as a steel hammer.

Why has that same weak ferrite magnet become so much stronger, when assembled with two steel pole pieces? The secret (rarely mentioned in ordinary books on magnetism) is by way of providing a low reluctance path (through the soft steel pole pieces) to the magnetic lines of force, which are "emitted" locally (on the flat sides of the ferrite magnet), located far away from the intended steel target.

Try it yourself, experimenting with only one of the steel pole pieces, or try different positions on the magnet, or even different sized steel pole pieces. You can demonstrate many interesting properties of magnets, with a few cheap magnets and cheaper steel washers. My own favorites include:

- Radio Shack #64-1888, pack of five 1-1/4" diameter ceramic magnets (about \$4 per pack of five).
- Steel Fender Washers, 1-1/4" outside diameter, available at hardware stores (about 12 cents each, even cheaper in a box of 100 flat washers).

As a Boy Scout, in my (distant) youth, I promised, to always "Be Prepared." The result is that, for the rest of my life, my pockets are always filled with stuff, non-typical, which most people don't carry around, but are fascinating to me, and are often enlightening to bored youngsters (of all ages) that I meet accidentally. - Richard Rew

*"You become old, only if you have lost your marvels."*

## Coming to Denver October 2: The First Inventor to File Roadshow

Many of you have heard that the America Invents Act (AIA) changed our patent system from a First to Invent -system to a First-Inventor-to-File (FITF) system. Well, not exactly. The new system isn't exactly like First to Invent in other countries because there are exceptions. Understanding those exceptions is important to managing your intellectual property (IP) and successfully prosecuting a patent application.

The U.S. Patent and Trademark Office (USPTO) will be hosting [seven roadshows](#) across the country in September and October to increase the understanding of the FITF provisions of the AIA. The roadshows will give USPTO subject matter experts and stakeholders an opportunity to discuss the FITF provisions and updates since its implementation. At each roadshow, the USPTO will present an identical agenda that includes FITF statistics to date, the applicability of the FITF provisions on patent applications filed today, the FITF statutory framework and its exceptions, and AIA evidentiary declaration practice useful to invoke these exceptions.



The roadshow stop in Denver is on October 2, from 9 a. m. to 1 p. m. in the USPTO's Rocky Mountain Regional Satellite Office in the Byron Rogers Federal Building, one block north of the 18th & Stout light rail station. The roadshow is free and open to the public. No registration is required, but seating is on a first-come, first-served basis. Can't make it? Not to worry: The Denver roadshow is one of only two that will be webcast live. And after the roadshow is over, copies of the written materials and a video will be posted on the AIA Roadshow page.

-Valerie Schlecht

### IEEE Denver Section

#### Mission Statement

Enrich the professional and personal lives of the Rocky Mountain Region members, developing them into valued contributors to society through quality programs, continuing education, career development and community service; in collaboration with IEEE, industry, government and academia.



The IEEE Denver Section is comprised of over 3600 engineers and technical professionals in the Denver - Boulder area.

<http://www.ieee-denver.org>