AES Newsletter

August 2013
Volume 18, Issue 3

Announcing two important conferences this fall: SciX & AIChE! Get involved, grow with us!

Inside this issue:

Many thanks to our supporters and friends for their generous contributions.

Bio-Rad Laboratories

CBS Scientific

GE Healthcare

Kendrick Labs, Inc

LabSmith

Our traditionally strong meetings would simply not be possible without help from our supporters. Their donations are greatly appreciated.

Send news for the web page **www.aesociety.com** to our new **Webmaster**

Blanca Lapizco-Encinas

bhlbme@rit.edu

Send news for the newsletter to one of our **Co-Editors:**

Nancy Kendrick
nancy@kendricklabs.com
or
Victor Ugaz
ugaz@tamu.edu

Contact **Matt Hoelter, AES Executive Director,** with any questions
matt-aes@tds.net

OVERVIEW AND KEY EVENTS

- **Technical program** covers Cell & Organelle Electrophoresis, Electrically Driven Processes in Nanofluidic Devices, Electrophoresis, Omics, and Dielectrophoresis
- **Inaugural AES Mid Career Award**
- **Hands-on Microfluidics Workshop**
- **Special issue of *Biomicrofluidics***

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IMPORTANT DEADLINES

- **July 31** - Late breaking poster submission deadline, last day to edit submitted abstracts
- **September 6** - Early bird registration deadline

ORGANIZERS

Alexandra Ros, Department of Chemistry and Biochemistry, Arizona State University

Edgar Goluch, Department of Chemical Engineering, Northeastern University

OVERVIEW AND KEY EVENTS

- **Technical program** - 14 oral sessions and a poster session with student awards
- **3 Workshops** dealing with Microfluidics & Electrokinetics, Modeling and Simulation of Microfluidic & Electrokinetic Phenomena, and Gel Electrophoresis of Proteins & Western Blotting
- **Lunch with Leaders, Member Banquet, Informal Networking Social**
- **AES Plenary and Award Sessions**
- **Special issue of *ELECTROPHORESIS***

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IMPORTANT DEADLINES

- **September 22** - Early bird registration deadline
- **October 21** - Late breaking poster submission deadline

ORGANIZERS

Amy Herr, Department of Bioengineering, UC Berkeley

Rafael Davalos, Department of Biomedical Engineering, Virginia Polytechnic Institute

MILWAUKEE

TECHNICAL PROGRAM AT A GLANCE

AES is teaming up with the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) to co-organize sessions focusing on dielectrophoresis, micro- and nanofluidics, new applications of conventional electrophoresis, and next-generation electrokinetic separations. **See the preliminary program** at: www.scixconference.org/program/preliminary-program

AES Sessions at a Glance

Monday, September 30, 2013

10:20 am-12:00 pm	**Electrically Driven Processes in Nanofluidic Devices;** Organizer, Stephen Jacobson
1:20 pm-3:00 pm	**AES Mid-Career Award Honoring Todd Squires;** Organizers, Edgar Goluch and Alexandra Ros
3:50 pm-5:30 pm	**Dielectrophoresis;** Organizer: Zachary Gagnon

Tuesday, October 1, 2013

10:20 am-12:00 pm	**Cell and Organelle Electrophoresis;** Organizer: Christopher R. Harrison
1:20 pm-3:00 pm	**Electrophoresis and Omics;** Organizer: Tzu-Chiao Chao

Program Highlights

- **Student Poster Session with Awards** (students can choose to participate in the competition during online abstract submission)
- **AES Session Speaker Dinner , Monday Evening September 30**
- **Speakers include:**

  Stephen Jacobson, Indiana University; Christopher Harrison, San Diego State University; Zachary Gagnon, Johns Hopkins University; Tzu-Chiao Chao, Regina University; Alexandra Ros, Arizona State University; Aditya Khair, Carnegie Mellon University

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With invited and contributed sessions covering all aspects of electrophoresis and its applications:

Fundamentals	Cells and Organelles	Proteomics
Microfluidics	Nanofluidics	Genomics
Gradient Techniques	Biomolecules	Theory

Thanks to Our 2013 SciX Co-Organizers!!

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MILWAUKEE WORKSHOP

Sunday, September 29, 8:00 AM - noon

SciX2013 MILWAUKEE, WI SEPT. 29 - OCT. 4, 2013 Hyatt Regency Milwaukee and Delta Center

Hands-on Microfluidics
Sponsored by LabSmith

- **Instructor**: Dr. Yolanda Fintschencko (LabSmith).
- **Description**: This workshop includes a 1.5 hour lecture and 2 hour hands-on component using LabSmith equipment, with time for breaks. Upon completing the course, participants will be able to identify parameters that are important for successful microfluidic experiments using electrokinesis and hydrodynamic flow techniques; construct their own microfluidic circuits using tubing and microfluidic chips provided; and control and image fluid transport in the microfluidic circuits using manual and automated solution delivery.
- **Cost**: $25.
- **Learn More and Register**: visit http://www.scixconference.org/workshops/workshop-list.

Special Proceedings Issue of *Biomicrofluidics*

AES is pleased to team up with the journal *Biomicrofluidics* to publish a special issue highlighting selected manuscripts associated with work presented at the AES Symposium during the SciX 2013 meeting. Benefits of contributing your work to this special issue include enhanced visibility and rapid turnaround time.

AIP | Biomicrofluidics
Fundamentals, Perspectives & Applications

We welcome papers aligned with work presented in any of the AES sessions at SciX. Topics include, but are not limited to, the following:

- Fundamental studies and applications of electrophoresis (e.g. cellular, organelle, omics)
- Related electrophoretic/electrokinetic techniques (e.g. dielectrophoresis, capillary zone)
- Electrically driven processes in micro/nanochannels
- Other analytical techniques employing micro/nanofluidic devices, including micro/nanoscale separations.

Contact the editors (Alexandra Ros and Edgar Goluch) regarding reviews related to any of these topics.

To ensure timely communication of this special issue, we will follow an accelerated timeline, with a deadline set for October 31, 2013 for manuscript submission, and publication date in early 2014. Please submit your manuscripts electronically at: http://bmf.peerx-press.org indicating that they are intended for this special issue, or contact one of the co-editors directly; further information is available at the AES website. All submissions will be subject to peer review in accordance with the standard journal policies. Additional information and directions for authors are available at http://bmf.aip.org/authors/information_for_contributors#submit.

AES members receive discounted conference registration at the "Member" rate.
Hurry! The early-bird registration deadline is September 6!

Register at https://www.scixconference.org/index.php/events/conference-registration/entry/add

SAN FRANCISCO
TECHNICAL PROGRAM AT A GLANCE

AES Members Receive Discounted Registration for the 2013 Annual Meeting!

Watch your email for a promo code to apply the member discount during your registration.

New members can obtain the promo code upon joining AES.

Visit the AES website for more information and detailed registration instructions.

http://www.aesociety.org/meetings/registration.php

Topical 3: 2013 Annual Meeting of the American Electrophoresis Society (AES)

See the complete program at https://aiche.confex.com/aiche/2013/webprogram/T3.html.

Monday, November 4, 2013

8:30 am-11:00 am	**Advances in Electrophoretic Protein Separation and Analysis** (Continental 5, Hilton)
12:30 pm-3:00 am	**Advances in Electrokinetics and Electrophoresis: Bioanalytical, Biosensing, and Biomedical Applications** (Continental 5, Hilton)
	Microfluidics: Bioanalytical Applications (Continental 7, Hilton)
3:15 pm-5:45 pm	**Plenary Session of the American Electrophoresis Society** (Continental 5, Hilton)
6:00 pm-7:00 pm	**Informal Networking Party**

Tuesday, November 5, 2013

8:30 am-11:00 am	**Ionic Fluxes At Interfaces, Electrohydrodynamics, and Electrospinning** (Continental 5, Hilton)
11:00 am-12:30 pm	**Lunch with Leaders**
12:30 pm-3:00 pm	**Electrokinetics in Non-Polar Media** (Continental 5, Hilton)
	Nanoscale Electrokinetics (Continental 7, Hilton)
3:15 pm-5:45 pm	**Electrokinetic Behavior of Micro- & Nano-Particles: Directed Assembly Under Electric Fields** (Continental 5, Hilton)
6:00 pm-8:00 pm	**Poster Session of the American Electrophoresis Society** (Continental 5, Hilton)

Wednesday, November 6, 2013

8:30 am-11:00 am	**Advances in Electrokinetics and Electrophoresis: Fundamentals** (Continental 5, Hilton)
12:30 pm-3:00 pm	**Electrokinetics for Sample Preparation** (Continental 7, Hilton)
	Electroporation, Electrophysiology and Cell Electrokinetics (Continental 5, Hilton)
3:15 pm-5:45 pm	**Award Session of the American Electrophoresis Society** (Continental 5, Hilton)
6:30 pm-10:00 pm	**AES Banquet**

Special Proceedings Issue of *ELECTROPHORESIS*

ELECTROPHORESIS

AES is pleased to team again with the journal *ELECTROPHORESIS* to publish a special proceedings issue highlighting manuscripts associated with work presented at the Annual Meeting. Benefits of contributing to this special issue include enhanced visibility and rapid turnaround time. We welcome papers aligned with work presented in any of the AES sessions, encompassing a broad range of experimental, theoretical, fundamental, and applied topics.

We will follow an accelerated timeline with a manuscript submission deadline of December 6, 2013, and publication date in early second half of 2014. Please submit manuscripts electronically at: http://mc.manuscriptcentral.com/elpho indicating that they are intended for this special proceedings issue, or contact one of the editors directly (Blanca H. Lapizco-Encinas and Rafael V. Davalos). All submissions will be subject to peer review in accordance with the standard journal policies. Additional information and directions for authors are available here.

San Francisco WORKSHOPS

Sunday Nov 3, 2013, Serrano Hotel, Room TBA

AES will hold *Three* Workshops at the 2013 Annual Meeting

Whether you're interested in keeping up with the latest developments in your field or want to learn something entirely new, these workshops offer something for everyone. ***Register now! at*** ***www.aesociety.org/meetings/workshop.php***

9:00 am - noon: Workshop 1 – Hands-on Microfluidics and Electrokinetics sponsored by LabSmith

- **Instructor**: Dr. Yolanda Fintschencko (LabSmith).
- **Description**: Take part in live demonstrations showcasing a variety microfluidic and electro-kinetic experiments. Participants will have the opportunity to gain hands-on experience with LabSmith equipment.

1:00 - 4:00 pm: Workshop 2 – Modeling and Simulation of Microfluidic and Electrokinetic Phenomena Using COMSOL Multiphysics sponsored by COMSOL

- **Instructor**: TBA Applications Engineer (COMSOL).
- **Description**: Learn how to use COMSOL Multiphysics numerical simulation software to model a variety of problems involving microfluidic and electrokinetic phenomena. Participants will receive a temporary software license and plenty of hands-on time.

1:00 - 4:00pm: Workshop 3 – Gel Electrophoresis of Proteins with Western blotting sponsored by Bio-Rad Laboratories

- **Instructor**: Dr. Thomas Berkelman (Bio-Rad Laboratories).
- **Description**: Learn the basic techniques of electrophoretic analysis, with hands-on demonstrations of SDS-polyacrylamide gel electrophoresis (SDS-PAGE) and Western blotting. Other analytical techniques such as native electrophoresis and isoe-lectric focusing will be discussed. Newer techniques that streamline the workflow and simplify analysis will be emphasized.

Workshop Fees: Faculty/Industry **$100;** Post-docs/Grad students **$50**; Undergraduates $25. Register for Workshop 1 and receive either Workshop 2 or 3 at half price.

SAN FRANCISCO MEMBER EVENTS

Informal Networking Party

Monday, Nov 4, 6 to 7 pm
What: Join your AES colleagues for some fun and informal fellowship.
Where: TBA.
Cost: Free (cash bar).

Lunch with Leaders

Tuesday, Nov 5, 11 to 12:30 pm
What: Students, meet and mingle with leaders in the field over lunch.
Where: The Daily Grill
Cost: $15.

AES Poster Session

Tuesday, Nov 5, 6:00 - 8:00 pm.
What: Late-breaking contributions from members and non-members are welcome, and will be accepted until October 21st 2013 (email abstracts directly to the session chairs). Awards will be given to outstanding student posters.
Where: Hilton San Francisco, Conti-nental 5.
Cost: Free, plus your poster might win!

AES Business Meeting

Wednesday, Nov 6, 6:00 - 6:45 pm
Want to get involved with AES? Attend our business meeting and volunteer!
Where: TBA.
Cost: Free!

AES Banquet

Wednesday, Nov 6, 6:30 - 10:00 pm.
What: Speaker: Eric Meikle, National Center for Scientific Education.
Where: Grand Café, Hotel Monaco.
Cost: $55/person.

Thanks to Our AES 2013 Meeting Co-Chairs!!

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3D Carbon-electrode Dielectrophoresis

By Rodrigo Martinez-Duarte[1] and Marc J. Madou[2,3]

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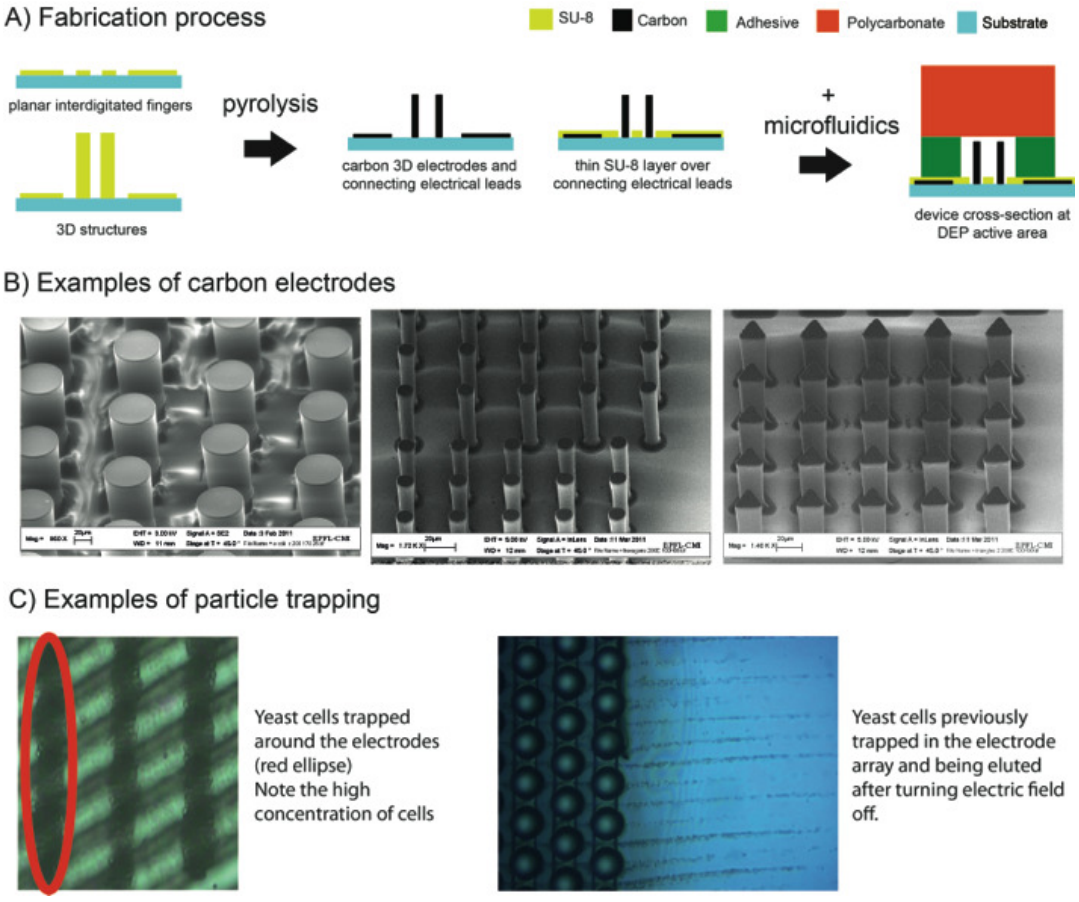
[2]*Department of Mechanical & Aerospace Engineering, University of California, Irvine, United States of America*

[3]*Ulsan National Institute for Science and Technology, World Class University Program, South Korea*

Dielectrophoresis (DEP) is a viable tool for the selective manipulation of a variety of particles for different applications including cell and microorganism sorting, tissue engineering, food safety and drug development. Although most of the work has been done using planar metal electrodes, other techniques, e.g. insulator-based and contactless DEP, have emerged to overcome some of the drawbacks of using metal electrodes, namely electrode fouling [1], and fabrication and materials cost. However, DEP still greatly suffers from the lack of high processing throughput which has hindered DEP from becoming more widely used in clinical applications. For example, high throughput is desired in cell sorting to provide a less expensive alternative to fluorescence-activated cell sorting (FACS) or magnetically-activated cell sorting (MACS); in food safety to quickly identify threats, i.e., *E. coli* and *Salmonella*, with very high sensitivity; in hospitals to quickly pinpoint the cause of an infection; in drug development to enrich very large populations of particles of interest. High throughput can be achieved by increasing the cross-section of the microfluidic channel. It is simple, the more you can put in the system the sooner you will process a given sample volume. Taller, rather than wider, channels are desired to maintain a small footprint of the DEP chips and minimize costs. The continuity equation establishes that the mass flow rate Q in a microchannel equals the product of the flow velocity υ and the cross-section area A of the channel ($Q = \upsilon \cdot A$). Therefore, the flow rate can be increased by increasing only the cross-section area but not the flow velocity. Since the hydrodynamic drag force acting upon particles flowing in a micro channel depends on the flow velocity, the maintenance of low flow velocity in the channel leads to a hydrodynamic force that can be easily overcome by a DEP force created using practical voltages and electrode gaps. Once the channel is made taller, one needs to induce an electric field throughout the whole volume of the channel to guarantee all particles flowing through get influenced by a DEP force. Indeed, the use of 3D electrodes, as tall as the channel and contained inside the channel, enables the addressing of all particles flowing in the channel. This is in contrast to planar electrodes positioned on the channel floor, ceiling or walls, which only address those particles flowing close to the channel surfaces. Another constraint in the fabrication of the electrodes comes from the fact that to induce electric field gradients suitable for DEP using practical voltage levels, say tens of volts, the electrodes must be very close together. The gap between electrodes must also be uniform across the height of the electrodes and thus a 3D structure with vertical walls is desired.

Here we present 3D carbon-electrode DEP as an alternative that could lead to the desired throughput levels. Its main advantages are the properties of carbon itself and the fabrication process that allows for the low cost fabrication of closely spaced arrays of electrodes featuring heights above 100 µm. Glass-like carbon electrodes are more electrochemically stable than metal ones and thus afford the appli-



cation of higher voltages, hence a stronger DEP force, across the sample without electrolyzing it [2]. In fact, glass-like carbon, also known as glassy carbon, is a preferred material among electrochemists due to its remarkable stability [3,4]. Glass-like carbon also has excellent biocompatibility and has been demonstrated both as an implantable material [5] and as substratum for cell culture [6]. Furthermore, glass-like carbon is chemically very inert in almost all solvents/electrolytes. Remarkably, it withstands attack from strong acids such as nitric, sulfuric, hydrofluoric or chromic and other corrosive agents such as bromine [6,7].

Glass-like carbon electrodes are derived via pyrolysis, heating to high temperatures in an inert atmosphere, of a previously shaped organic polymer in a process known as Carbon MEMS (C-MEMS) [2]. Carbonizable polymers are widely available and high-quality ones are typically much less expensive than metals such as gold and platinum used in thin film and electroplating metal electrode fabrication. The polymer can be shaped using any suitable low cost technique such as photolithography, machining, molding or embossing. No expensive and complex equipment such as metal evaporators or metal sputter coaters is required. The use of SU-8 photolithography in particular allows for the patterning of very narrow gaps between high-aspect-ratio structures featuring vertical walls.

Not surprisingly, 3D carbon electrodes are not the perfect solution for every application. A potential disadvantage of carbon-DEP is the electrical resistivity of glass-like carbon (~1 X 10-4 Ω·m [9]), which is four orders of magnitude greater than gold. The voltage loss that develops from the ohmic resistance in the narrow leads connecting the base of the electrodes and the function generator makes it necessary to use higher voltage levels than those used in metal-electrode DEP but still much less than those use in insulator-based DEP. A voltage in the range of 20 volts has been demonstrated to be sufficient to create a suitable DEP force to manipulate eukaryotic cells when using carbon electrodes [8, 10, 12]. Current efforts are on the patterning of carbon electrodes on top of metal leads to further lower the voltage requirements. Another potential disadvantage in carbon-DEP is the restriction on the kind of substrate used for fabrication. Few materials survive the high temperatures (>900 °C) required during the carbonization process and they can be expensive. For example, the fabrication of carbon electrodes on transparent substrates currently requires the use of fused silica or quartz. However, if a transparent substrate is not required, carbon electrodes can be fabricated in relatively inexpensive substrate such as silicon and silicon oxide. On the positive side, a single substrate, i.e., a 4" wafer, can lead to several experimental devices and the impact of the high cost of the substrate can be minimized.

The fabrication details of carbon-electrode DEP chips featuring transparent and opaque substrates can be found in the works by Martinez-Duarte and colleagues [8, 10]. Carbon-electrode DEP has so far been used for the manipulation of *S. cerevisiae* [8,10], *Drosophila melanogaster* [8], *E. coli* [11], DNA and *M. smegmatis* (data not yet published). The incorporation of carbon-DEP in a centrifugal microfluidics platform has also been demonstrated [12] towards an automated and portable DEP platform. Modeling and simulation work of carbon-DEP has been carried out by different authors [13,14]. An overview of the use of carbon electrodes in other applications has been presented by Martinez-Duarte et al. [15].

References

[1] Gencoglu, A. and Minerick, A., *Lab on a Chip* 2009, 9, 1866-1873.

[2] Wang, C., Jia, G., Taherabadi, L. H., Madou, M. J., *Journal of Microelectromechanical Systems* 2005, 14, 348-358.

[3] Blaedel, W. J., Jenkins, R. A., *Analytical Chemistry* 1974, 46, 1952-1955.

[4] Zittel, H. E., Miller, F. J., *Analytical Chemistry* 1965, 37, 200-203.

[5] Maropis, P. S., Molinari, J. A., Appel, B. N., Baumhammers, A., *Oral surgery, Oral Medicine and Oral Pathology* 1977, 43, 506-512.

[6] Turon Teixidor, G., Gorkin Iii, R. A., Tripathi, P. P., Bisht, G. S., Kulkarni, M., Maiti, T. K., Battacharyya, T. K., Subramaniam, J. R., Sharma, A., Park, B. Y., Madou, M., *Biomedical Materials* 2008, 3, 034116.

[7] Cowlard, F. C., Lewis, J. C., *Journal of Materials Science* 1967, 2, 507-512.

[8] Martinez-Duarte, R., Ph.D., Mechanical and Aerospace Engineering, University of California, Irvine, Irvine 2010.

[9] Park, B. Y., Taherabadi, L., Wang, C., Zoval, J., Madou, M. J., *Journal of the Electrochemical Society* 2005, 152, J136-J143.

[10] Martinez-Duarte, R., Renaud, P., Madou, M.J., *Electrophoresis* 2011, 32, 2385-2392.

[11] Jaramillo, M., Torrents, E., Martinez-Duarte, R., Madou, M., Juarez, A., *Electrophoresis* 2010, 31, 2921-2928.

[12] Martinez-Duarte, R., Gorkin, R., Abi-Samra, K., Madou, M., Lab on a Chip 2010, 10, 1030-1043.

[13] Park, B. Y., Madou, M. J., *Electrophoresis* 2005, 26, 3745-3757.

[14] Martinez-Duarte, R., Cito, S., Collado-Arredondo, E., Martinez, S. O., Madou, M. J., *Sensors & Transducers Journal* 2008, 3, 25-36.

[15] Martinez Duarte, R., Turon Teixidor, G., Mukherjee, P., Kang, Q. and Madou, M.J., in *Microfluidics and Microfabrication* ed. S. Chakraborty, Springer, 181-263 (2009).

Rodrigo Martinez-Duarte

Marc J. Madou

The Trailing Zone by Victor M. Ugaz

A column highlighting broader perspectives and observations about science and the lives of those who pursue it.

Getting Away

Summer is a time for vacation, or so I've heard. Some of my friends and relatives take their vacations very seriously, planning trips to resorts, theme parks, campgrounds, or other places of long standing family significance. But for me, neither the idea nor the reality of vacation time seems to have that kind of meaning.

A vacation is supposed to be "a period of suspension of work, study, or other activity, usually used for rest, recreation, or travel," at least according to dictionary.com. This sounds great, until I realize how blurry the lines between work and personal existence have become. I've banked more vacation time from my employer than I can ever hope to use. In fact, I have so much saved up that I'm not even allowed to carry all of it over from year to the next. So what's the point? How can concept of a vacation be clearly defined when work inevitably creeps into all hours of the day, night, weekends, and holidays? Is there really such a thing as a vacation anymore?

Recently I've been forced to confront this question more directly. These conceptual complications don't exist in the mind of my five year old son. In fact, the opposite is true. Not only is a vacation absolutely mandatory, there are certain expectations about what a true vacation should involve. It means traveling somewhere and doing something out of the ordinary.

The whole process begins months in advance. When the idea of a vacation is mentioned, my first response is denial. Maybe this whole thing will blow over if I leave it alone. I go through the calendar listing all the reasons why each successive week is not a good time for a vacation. There are proposal deadlines, meetings, and other responsibilities. But my arguments are futile. There is never a "good" time.

I'm eventually forced to accept the inevitability of the upcoming vacation, but I haven't completely given in. Acceptance is enabled by a mental illusion that I could actually still get some work done during this time. Maybe it will be good to get away because I'll have some time to work in the evenings and early mornings. This could be good. Of course these expectations are woefully unrealistic and destined to fail miserably. Kids expect your full attention, nothing less will do.

Finally comes the part I dread the most. What I call the "digging out phase." This is the time after returning from the vacation when you're confronted with being hopelessly behind on all the things you didn't keep up with during the vacation. Already tired and worn out, I must now face the mountains of all things physical (e.g., laundry) and virtual (e.g., email) waiting to be scaled. Why did I ever agree to do this? Imagine how much I could have accomplished if I had that time back?

This year I decided to focus on the acceptance phase. I made it a point to put work aside so I could be completely present during the vacation. After all, these times represent only a minute fraction of an entire life. But memories of these fleeting moments are disproportionately valuable and therefore worth fully experiencing. Granted, this can be difficult because we live in a world of constant connectivity with increasing expectations of instant accessibility and response. The boundaries between work and personal life continue to dissolve. Still, I did my best to limit my "device" time and respond only to the things I felt were most urgent. This worked well overall. It made the time away was much more enjoyable. A month after returning, however, I'm still stuck in the digging out phase. I haven't yet found a solution to deal with this part.

Do you have strategies for dealing with "vacation" time? I'd love to hear them. If there are enough responses I'll feature them in a future column.

Enjoy summer vacation...there's still time!!

Victor M. Ugaz (ugaz@tamu.edu) is Associate Professor and K. R. Hall Development Professor in the Artie McFerrin Department of Chemical Engineering at Texas A&M University. Comments and suggestions are welcome.

Upcoming Elections

Please submit nominations by August 16th!!

The officers and council of the AES Electrophoresis Society invite nominations for the following positions (self nominations are encouraged):

* **Vice President:** The Vice-President is the President-elect and shall assist the current President and/or fill in for the President as necessary. The Vice-President shall oversee annual meeting planning, lead workshop development, organization, and execution, and participate in committees as needed. The Vice-President will also coordinate monthly communications to members. This is a two-year position.

* **Councilors:** This is a three-year position and **two** Councilor positions will be open this year. The responsibilities of the position are to participate in all teleconferences (once per month), serve on one committee (sponsorship, membership, or ad-hoc), and contribute as needed based on individual contacts or ideas. We also encourage (but certainly don't require) our Councilors to participate as meeting co-organizers.

* **Secretary:** This is a two-year position. The responsibilities of the position are to help arrange teleconferences (once per month), facilitate the functioning of the society in coordination with the President and Executive Director, serve on one committee (sponsorship, membership, or ad-hoc), and contribute as needed based on individual contacts or ideas.

* **2015 AES Annual Meeting Co-organizers:** This is a one-year position held jointly by two individuals. These individuals are responsible, with the assistance of the council, for arranging session chairs who field calls for papers, organizing contributions into sessions, and developing an outstanding three-day schedule. These individuals are the key contacts coordinating with AIChE with all co-programming duties and overseeing of the entire annual meeting experience.

* **2014 AES-SciX Meeting Co-organizer:** This one-year position has similar duties as the annual meeting, but co-programs with a SciX representative performing all of the duties discussed above.

The nomination phase will close August 16th. Please send nominations to Adrienne Minerick, AES President at minerick@mtu.edu. The nominees and their statements will be posted online at http://www.aesociety.org/about_us/nominations.php. Membership voting for the Executive Vice-President and Councilors will be open until Friday, October 18th. The elected individual will assume the position at the board meeting at the AES Annual Meeting, the 3rd of November in San Francisco, CA.

Nominations should include full name, contact information and affiliation accompanied by a 50 to 100 word statement introducing yourself to the membership, commenting on why you would be good for the position, what you would do to move AES forward, as well as ideas to advance electrophoretic applications. Nominations will be posted online by August 20th and will be included in the Fall newsletter to aid with member voting.

AES Bylaws are available at http://www.aesociety.org/about_us/bylaws.php. Feel free to contact any of the board members at http://www.aesociety.org/about_us/council.php with any questions.