

## HAPPY BIRTHDAY! PAPER/WORK IS 1 YEAR OLD

Dear Postdocs and Friends,

Welcome to the first issue of our second volume! As Paper/Work turns one year old, I congratulate our team on producing 25 issues packed with fantastic content for the postdoc community at LLNL. We've interviewed four senior managers to learn about the Lab, as well as 19 current and former postdocs to learn about each other and what we go on to do after our postdoc days. We've also provided news and offered career development tips.

Going forward, I invite you to join our Paper/Work newsletter team to help keep this project going. It's a volunteer effort by postdocs, for postdocs. Whether you contribute occasionally or regularly, your help is needed.

Sincerely,



Nathan Kugland  
President and Newsletter Editor  
Lawrence Livermore Postdoc Association



[www.looneyballoon.com](http://www.looneyballoon.com)

Our first issue, from way back in 2011



**Paper/Work** LLNL Postdoc Association Newsletter  
October 12, 2011 • Volume 1, Issue 1

**Welcome to Our New Newsletter**  
Welcome to the first issue of the Postdoc Association Newsletter! Our goals as an association are to foster a sense of community among the postdocs, advocate by advising the Postdoc Program on what support is needed, and provide information about how to acclimate to the Lab and the Bay Area.

With this newsletter, we're going to work towards those goals by regularly broadcasting news about what's going on, try to provide some useful information and finally, be highly interactive! This last part needs your input. Please let us know how we're doing, and if you think of anything that we should share with the community.

Sincerely,   
Nathan Kugland, Postdoc Association Vice President and Newsletter Editor

**Food, Fire, and Professional Networking**  
Post-doc barbecue picnic brought PDs and family to Del Valle Regional Park on July 8<sup>th</sup>  
By Andre Schleife

On Friday, July 8<sup>th</sup> 2011, the Lawrence Livermore Postdoc Association invited the Postdocs and their families to come together for our annual Barbeque in the beautiful setting of the Del Valle Park a few miles south of Livermore. With about 90 tickets sold, this year's event promised to be even bigger than the previous Postdoc Barbeque and, indeed, more people showed up than ever before to enjoy cool drinks, hot grilled food, and chill conversations with colleagues and friends in a relaxed atmosphere.

The event started out in the afternoon with the first people arriving around 4 pm in the park. Perfect weather helped set the mood, with warm sunshine, a nice breeze, and plentiful shade under lots of trees. Shortly after, the Barbeque was fueled and run by volunteering professionals—thanks for your help! With the picnic feeling established, everyone mingled and talked, joked and discussed, or just enjoyed a Friday afternoon in the Postdoc community. The hours flew by and by the time the clock hit nine, the last people helped clean up, not to leave the slightest trace of this event in the park.

Thanks to everyone for coming, for contributing delicious desserts and snacks, and for making this event such a nice opportunity to get to know your fellow Postdocs (and their families) at LLNL! We hope you enjoyed it as much as we did and we are looking forward to the future events that we will have together!

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## POSTDOC HIGHLIGHTS: NOTES TO THE DIRECTOR

### Extraction of wind energy will not affect global climate

In a paper in the September 9 edition of *Nature Climate Change*, postdoc **Kate Marvel** and colleagues from the Carnegie Institution's Department of Global Ecology show that there is enough power in the Earth's winds to be a primary source of near-zero emission electric power for the world, and that large-scale high altitude wind power generation is unlikely to substantially affect climate. Historically, wind turbines have been placed on the Earth's surface, but high-altitude winds are usually steadier and faster than near-surface winds, resulting in higher average power densities. Marvel et al. used a climate model to estimate the amount of power that could be extracted from both surface and high-altitude winds, considering only geophysical limits. They found that wind turbines placed on the Earth's surface could extract kinetic energy at a rate of at least 400 terawatts (TW), whereas high-altitude wind power could extract more than 1,800 TW. At these high rates of extraction, there are pronounced climatic consequences. However, at the level of present global primary power demand (~18 TW), uniformly distributed wind turbines would be unlikely to substantially affect the Earth's climate. They conclude that growth of wind power will be limited by economic or environmental factors, not global geophysical limits.

<http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1683.html>



### Best Interactive Presentation Award at ASME IDETC Conference

A paper authored by postdocs **Jonathan Hopkins** and **Kyle Lange**, along with Chris Spadaccini, was awarded Best Interactive Presentation at a recent ASME sponsored conference. The paper, entitled "Synthesizing the Microstructure of Thermally Actuated Materials Using Freedom, Actuation, and Constraint Topologies," demonstrated how the principles of the Freedom, Actuation, and Constraint Topologies (FACT) synthesis approach may be applied to the design of compliant microstructural architectures that possess extreme or unusual thermal expansion properties (e.g., zero or large negative thermal expansion coefficients). Lead author Jonathan Hopkins presented the paper at the Compliant Mechanisms Symposium of the ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, which was held August 12–15 in Chicago.



### Lab researchers produce book on nanoporous gold

Jürgen Biener and former postdoc **Arne Wittstock**, together with colleagues from Johns Hopkins University and the Institute of Applied and Physical Chemistry (Bremen, Germany), are the editors of a new book entitled *Nanoporous Gold: From an Ancient Technology to High-Tech Material*. Nanoporous gold (np-Au) is a prime example of a corrosion-derived, bulk nanostructured material, a fascinating class of materials that has been intensively investigated in recent years because of their promise for numerous applications, including catalysis, sensors and actuation, and optics. The book provides an up-to-date, broad multidisciplinary exposition of the synthesis and properties of np-Au, and covers both experiment and theory. In addition to serving as co-editors, Wittstock, Biener, and colleague Marcus Bäumer (Bremen), also authored the introductory chapter and a chapter on the surface chemistry and catalytic properties of np-Au.



## CAREER RESOURCES

### UPCOMING EVENTS

#### *Science and Technology Day*

October 12<sup>th</sup>, 8:45 am – 6:00 pm  
B123 Auditorium

The day will highlight a “history of innovation” with speakers discussing astrophysics, high energy density physics, high performance computing medical drug development, nucleosynthesis, climate science, and much more! Come hear about exciting work throughout the lab, and mingle with colleagues from many diverse fields at a poster session from 11:45 am – 1:00 pm. You can peruse the full agenda [here](#).

## REPLY HAZY, TRY AGAIN



Identifying the perfect position in today’s job market is no easy task. With all the uncertainty in today’s world, it is becoming more and more important to draft a well-defined career plan. It can be difficult to sit down and accomplish this in a systematic

way, so if you’re tired of taking career advice from your magic 8 ball and Ouija board, [Science Careers has a tool](#) that may be useful to you.

[myIDP](#) is an interactive web tool designed to help identify your career goals and establish steps toward bringing them into reality. The involved steps include:

1. Evaluating your own skills, values, and interests.
2. Using this self-assessment as a guide for exploring and evaluating career opportunities in your field and ultimately identifying your preferred career, as well as some viable alternative options.
3. Setting specific goals to prepare you for the career paths to which you aspire.
4. Putting the plan into place through steps which will hold your progress accountable.

All of your progress is stored confidentially, with the hope that going through this process will aid in gaining stronger self-awareness, identifying achievable strategies, and creating a viable game plan.

## THE DREADED TWO-BODY PROBLEM



A recent [article in Nature Jobs](#) discusses one of the practical problems encountered by many in science, whether they’re applying for grad school, a postdoc, or a faculty position: you’ve found the perfect position in another location, but your partner hasn’t.

This is a frustrating problem without easy solutions, not only for job-seekers, but also for those doing the hiring. University search committees may spend up to \$18,000 advertising and recruiting a candidate, not to mention the time invested by faculty members. So when that perfect match is found, everyone is hoping to seal the deal.

The University of Nebraska has set up a program, funded by a grant from the NSF, to address the specific issue of a candidate with a partner who is also seeking a position in academia. In this process, candidates disclose to the University office (separate from the search committee, so as not to influence their decision) whether they have a partner in this situation. If an offer is made to the primary candidate, the grant will provide for up to three years of bridge funding to the secondary candidate, provided that support is found from another department. So far, 12 couples have been hired as a part of this program, and participants have appreciated the transparency of the institutionalized process. Whether or not similar programs will arise elsewhere is difficult to say, but one thing is certain, two-body complications are unlikely to go away.

## JOB LINKS



**Science – Featured jobs:**

<http://scjobs.sciencemag.org/featured-jobs/>

**Nature – Jobs of the week:**

<http://www.nature.com/naturejobs/science/>

**Official LLNL jobs site:** [careers.llnl.gov](http://careers.llnl.gov)

**Postdoc listings:** [www.postdocjobs.com](http://www.postdocjobs.com)

**Academic jobs:** [www.academickeys.com](http://www.academickeys.com)

**APS Careers in Physics:** [www.aps.org/careers](http://www.aps.org/careers)

**Government jobs:** [www.usajobs.gov/](http://www.usajobs.gov/)

**Industry jobs:** [www.indeed.com](http://www.indeed.com)

<http://jobs.newscientist.com/>

[sfbay.craigslist.org/sci/](http://sfbay.craigslist.org/sci/)

[www.linkedin.com/jobs](http://www.linkedin.com/jobs)

## SELECTED RECENT POSTDOC RESEARCH PUBLICATIONS

**Bold** = LLNL Postdoc. *Broadcast your achievements! Make new connections & help show how we are doing collectively.*

**Guidelines:** 1) Peer-reviewed and accepted publications (journal or conference proceedings) only; 2) Your affiliation must be LLNL; 3) Prepare a standard-format citation with all authors (no *et al*), the full title, journal/proceedings info, and a link to the online abstract; 4) Note which authors are LLNL postdocs, and in what division & group; 5) Send all of this to Nathan ([kugland1@llnl.gov](mailto:kugland1@llnl.gov)).

*Computation/CASC:* Chandrika Kamath and **Ya Ju Fan**, "Using Data Mining to Enable Integration of Wind Resources on the Power Grid," *Statistical Analysis and Data Mining*, Volume 5, Issue 5, October 2012, pp 410-427.

<http://onlinelibrary.wiley.com/doi/10.1002/sam.11164/abstract>

*Engineering/Materials Engineering\* and PLS/Chemical Sciences Division\*\*:* **A.J. Pascall\***, **K.T. Sullivan\*\***, J.D. Kuntz, "Morphology of Electrophoretically Deposited Films on Electrode Strips," *Journal of Physical Chemistry B* (invited).

<http://dx.doi.org/10.1021/jp306447n>

*Engineering/Materials Engineering:*

**Hopkins, J.B.**, McCalib, D.B., "Synthesizing Precision Flexures That Decouple Displacement-based Actuators," Proc. of the 27th Annual Meeting of the American Society for Precision Engineering, San Diego, CA, October 2012.  
[www.aspe.net/publications/Short%20Abstracts%2012A/3585.pdf](http://www.aspe.net/publications/Short%20Abstracts%2012A/3585.pdf)

**Hopkins, J.B.**, **Lange, K.J.**, Spadaccini, C.M., "Synthesizing the Microstructure of Thermally Actuated Materials Using Freedom, Actuation, and Constraint Topologies," Proc. of the ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2012, Chicago, IL, USA, August 2012.

**Hopkins, J.B.**, "Modeling and Generating New Flexure Constraint Elements," Proc. of the 12th International Conference of the European Society for Precision Engineering & Nanotechnology, Stockholm, Sweden, June 2012.

*NIF/Photon Science and Applications:* **D. Alessi**, T. Spinka, S. Betts, V. K. Kanz, R. Sigurdsson, B. Riordan, J. K. Crane, and C. L. Haefner, "High Dynamic Range Temporal Contrast Measurement and Characterization of Oscillators for Seeding High Energy Petawatt Laser Systems," Conference on Lasers and Electro Optics (CLEO), May 6-11, CM4D.5 (2012)

<http://www.opticsinfobase.org/abstract.cfm?URI=CLEO:%20S%20and%20I-2012-CM4D.5>

*NIF/High Energy Density Science:* **N. L. Kugland**, D. D. Ryutov, P.-Y. Chang, R. P. Drake, G. Fiksel, D. H. Froula, S. H. Glenzer, G. Gregori, M. Grosskopf, M. Koenig, Y. Kuramitsu, C. Kuranz, M. C. Levy, E. Liang, J. Meinecke, F. Miniati, T. Morita, A. Pelka, **C. Plechaty**, R. Presura, A. Ravasio, B. A. Remington, B. Reville, **J. S. Ross**, Y. Sakawa, A. Spitkovsky, H. Takabe, and H.-S. Park, "Self-organized electromagnetic field structures in laser-produced counter-streaming plasmas," *Nature Physics* (September 30, 2012) <http://dx.doi.org/10.1038/nphys2434>

## POSTDOC RESEARCH PUBLICATIONS, CONTINUED

*PLS/Condensed Matter and Materials Division:* M.T. Myers, **S. Charnvanichborikarn**, C.C. Wei, Z.P. Luo, A. Aitkaliyeva, L. Shao, and S.O. Kucheyev, "Defect microstructure in heavy-ion-bombarded (0 0 0 1) ZnO," *Acta Mater.* 60, 6086 (2012). <http://dx.doi.org/10.1016/j.actamat.2012.07.046>

*PLS/Chemical Sciences Division\* and PLS/Materials Engineering Division\*\*:* **K. T. Sullivan\***, **C. Zhu\*\***, D. J. Tanaka, J. D. Kuntz, E. B. Duoss, and A. E. Gash, "Electrophoretic Deposition of Thermites onto Micro-Engineered Electrodes Prepared by Direct-Ink Writing," *Journal of Physical Chemistry B (Invited Article)*, 2012. <http://pubs.acs.org/doi/abs/10.1021%2Fjp306440t>

*PLS/Fusion Energy Sciences:* P. A. Amendt, **C. Bellei**, S. C. Wilks, "Plasma Adiabatic Lapse Rate", *PRL* 109, 075002 (2012) <http://prl.aps.org/abstract/PRL/v109/i7/e075002>

*PLS/Nuclear Physics:* **E. Kwan**, C.Y. Wu, R.C. Haight, H.Y. Lee, T.A. Bredeweg, **A. Chyzh**, M. Devlin, N. Fotiades, J.M. Gostic, R.A. Henderson, M. Jandel, A. Laptev, R.O. Nelson, J.M. O'Donnell, B.A. Perdue, T.N. Taddeucci, J.L. Ullmann, S.A. Wender, "Prompt Energy Distribution of  $^{235}\text{U}(n,f) \gamma$  at Bombarding Energies," *Nuclear Instruments and Methods in Physics Research A* 688 (2012) 55-61. <http://www.sciencedirect.com/science/article/pii/S0168900212006390>

*Weapons and Complex Integration:* **I. Karlin**, J McGraw, J. Keasler and C. Still, "Tuning the LULESH Mini-app for Current and Future Hardware," in proceedings of Nuclear Explosive Code Development Conference (NECDC12), October 2012. pp. 1-4. LLNL-ABS-564179.

## COMMENTS/SUGGESTIONS/PRAISE/COMPLAINTS?

Please send your feedback to the Editor (Nathan Kugland, [kugland1@llnl.gov](mailto:kugland1@llnl.gov)).

## LLNL POSTDOC ASSOCIATION LEADERSHIP COUNCIL

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