

To: DLS Executive Committee
From: Dan Stamper-Kurn, NLSC 2012 Chair
cc: Dan Gauthier, NLSC 2012 vice-Chair

Re: Report on the 2012 New Laser Scientists Conference

The 2012 New Laser Scientists Conference (NLSC) took place on October 18th and 19th in Rochester, New York. Following tradition, the meeting was organized as a satellite meeting at the end of the OSA Annual Meeting. This was the 7th occurrence of the NLSC, which has run biannually since 2000.

The APS Division of Laser Science was the sole sponsor of the conference. Efforts were made also to raise funds from the AFOSR, with the expressed purpose of providing travel support to conference attendees. Such support is particularly important given that many of the attendees are from smaller Universities and are using scarce startup funds to attend the meeting. Unfortunately, in spite of initial commitments by the AFOSR, our request for support was declined at the last minute.

Twenty new laser scientists took part in the meeting, all of whom were selected by the Chair and vice-Chair and invited to attend the meeting. These scientists were selected from a larger pool of nominees generated by soliciting senior laser scientists and perusing websites of various Physics Departments. Two additional scientists were invited but could not attend for sundry reasons. Several other scientists were considered but not invited due to their being appointed at foreign (Canadian) universities; while there was no clear guideline on whether participants should hail only from US institutions, we surmised this to be the case.

The conference program is appended to this report. The program consisted mostly of 15 minute presentations by the attendees, in which they discussed their research accomplishments and future plans. The periods between talks were filled with lively discussion.

The program included also panel discussions. The first was titled "Perspectives on being a laser scientist." A panel was convened of four senior scientists – Hui Cao (Yale), Warren Grice (Oak Ridge), and the Chair and vice-Chair – who discussed topics such as how to select research topics, how to seek out advise from senior colleagues, how to select for good students and postdocs, how to balance work with other interests, etc. A second panel, on the topic of "Funding opportunities for new laser scientists," was supposed to feature three program managers. However, in spite of early commitments, none of the program managers made it to the meeting. Instead, an impromptu discussion was led by the Chair and vice-Chair. While we were disappointed by the late change of format that was forced upon us, the discussion appears to have been well received.

The budget of \$5000 provided by the APS DLS was used to support catering costs at the Hyatt Regency (\$4000), and to support travel costs of young scientists attending the meeting (\$1000). Other costs incurred in organizing the meeting, such as travel costs for the Chair, vice-Chair, and an administrative aide from Berkeley, and other costs prior to the meeting, were absorbed by funds available to the Chair at his University.

We solicited feedback regarding the meeting from the conference attendees in the form of emails to the conference Chair. These emails are provided below. The overall feedback was very positive, showing that the NLSC provides a unique and important service to young scientists. The present format of the meeting has evolved to be well tuned to the needs of the attendees.

We list several suggested changes to improve the NLSC series:

- **Ensuring that program managers contribute to the meeting:** It seemed particularly difficult this year to secure participation from program managers in the NLSC. About a dozen managers were contacted. Three indicated early on that they were glad to attend the meeting, but pulled out

as the meeting approached; one only canceled on the opening day of the conference. We were told that new restrictions on program managers, related to budgetary constraints and reactions to the 2012 “GSA Party” fiasco, made it extremely difficult for them to attend meetings.

If these restrictions remain in place, future NLSC Chairs would be advised to be more persistent in getting funding managers to commit to the meeting. Also, one should explore whether program managers can participate in (several) panel discussions using teleconferencing facilities (e.g. Google Talk or Skype).

- **Securing additional funding:** The \$5000 provided by the APS DLS is an excellent investment in the conference and in young scientists. Conducting the conference in conjunction with the OSA Annual Meeting allows us to reduce costs to fit within that allotted budget. However, it would be preferable to find more financial support for the meeting to help defray the travel costs of conference attendees. We had hoped to bring in another \$5000 from the AFOSR. They agreed to support the meeting at this level, but then rescinded their offer at the last minute, stating that new regulations had greatly limited their ability to support conferences. It seems likely that some additional support can be found for future meetings.
- **Conference website:** As the Chair was planning this meeting, it was hard to find information on previous NLSC’s: who ran them, where were they held, who attended, what lessons were learned from running those meetings, etc. Information about the conference was also not readily available to potential, or actual, conference attendees. It is therefore recommended that a more permanent web-presence be arranged for the NLSC. Given that the APS-DLS has supported the conference regularly, it would make sense for the conference to be announced on the DLS website (and newsletters), with links to information about the meeting.
- **Better meeting space:** Future Chairs should be more mindful of the layout of the meeting room and space for coffee breaks provided to the NLSC. The arrangement provided by the Hyatt this year was sub-optimal.
- **More discussion sessions:** The two discussions held at this meeting were very well received. Participants also suggested a forum for discussing and criticizing proposal ideas, perhaps by peer-review in small groups..

New Laser Scientists Conference
October 18-19, 2012
Sponsored by the American Physical Society Division of Laser Science
Carson room, Hyatt Regency Hotel, Rochester

Thursday, October 18th

- 1:30 – 1:40 Welcome and Introduction
- 1:40 – 2:00 Gregory Fuchs, Cornell University
Quantum coherence of single solid-state spins
- 2:00 – 2:20 Michael Scheibner, University of California, Merced
Tailoring optical properties via controlled coupling in quantum dot systems
- 2:20 – 2:40 Qiang Lin, University of Rochester
Silicon microresonators for integrated quantum photonic applications
- 2:40 – 3:20 Panel discussion: Perspectives on being a laser scientist
- 3:20 – 3:40 Coffee Break
- 3:40 – 4:00 Nick Vamivakas, University of Rochester
Quantum optics with quantum dots
- 4:00 – 4:20 Ania Jayich, University of California, Santa Barbara
Magnetometry and quantum information processing with diamond
- 4:40 – 5:00 Gilles Doumy, Argonne National Laboratory
High repetition rate, ultrafast, pump/probe studies at synchrotrons
- 5:00 – 5:20 Carlos Trallero, Kansas State University
Strong field coherent spectroscopy
- 5:20 – 5:40 Elaine Li, University of Texas
Light scattering from collective modes of electrons
- 7:00 – 9:00 Dinner (Wilmorite room)

Friday, October 19

- 7:45 – 8:30 Breakfast
- 8:30 – 8:50 Jonathan Wrubel, Creighton University
Counting small numbers of atoms using phase-sensitive matter-wave amplification in a ^{23}Na spinor Bose-Einstein condensate
- 8:50 – 9:10 David Weld, University of California, Santa Barbara
New frontiers for ultracold atoms
- 9:10 – 9:30 Jonathan Simon, University of Chicago
Microscopy of quantum materials in optical lattices
- 9:30 – 9:50 Jason Stalnaker, Oberlin College
Direct frequency-comb spectroscopy of atomic vapors
- 9:50 – 10:10 Coffee Break
- 10:10 – 10:30 Steve Olmshenk, Denison University
Quantum information with trapped ions and telecom photons
- 10:30 – 10:50 David Hanneke, Amherst College
Precision measurements with trapped ions
- 10:50 – 11:10 Hartmut Häffner, University of California, Berkeley
Trapped ion meet solid state physics
- 11:10 – 12:00 Discussion: Funding opportunities for new laser scientists
- 12:00 – 1:00 Lunch (on your own)
- 1:00 – 1:20 Thomas Corbitt, Louisiana State University
Gravitational wave detection with opto-mechanics
- 1:20 – 1:40 Nathaniel Stern, Northwestern University
Quantum manipulation in near-field photonics
- 1:40 – 2:00 Martin Fischer, Duke University
Pump-probe microscopy in scattering media: from biological tissue to historic works of art
- 2:00 – 2:20 Ken Knappenberger, Florida State University
Nanoscale optical properties and dynamics studied using laser-based spectroscopy
- 2:20 – 2:40 Jing Xu, University of California, Merced
Using optical traps to study the nonlinear problem of cargo travel driven by small ensembles of molecular motors
- 2:40 – 3:00 Closing remarks

Feedback from conference participants

This meeting was a great opportunity to put my own efforts in context with my peers, get advice on many topics, meet new people, and discuss ideas that are important for this stage in my career. I really appreciated the NSF (and DLS) support for this meeting, and I found that it was very valuable. I left the meeting with at least one more potential collaborator, which I think is great.

The NLS conference was great! The entire experience was very valuable. In particular:

-- it was very good to talk one-on-one with other new faculty members (much of this occurring during the breaks, at dinner, etc.);

-- the panel discussions were very useful in describing facets of a faculty position not often widely discussed (such as how to view letters of recommendation for potential hires, etc.);

-- I felt that the length of the talks was about perfect for this venue, as there was just enough time to give a little background and present future plans.

Of course, it is unfortunate that none of the program managers were able to make it to the conference, as I am sure their input would have been highly valued by all attendees. Besides that, another thing I might suggest would be a brief organized summary of some of the particulars of the "young investigator" grants that many of us are looking toward. (Many of these details came up during the panel discussion anyway, and then also in individual conversations, but probably a quick summary of some of the details at the beginning of the panel discussion may have been worthwhile, too.) Finally, given that a fair number of the attendees were from smaller institutions, it also may have been useful to have one of the panel members be a successful researcher from a smaller institution.

Again, it was a fantastic conference, and I am very glad I was invited to attend!

Thank you very much for organizing the NLSC last week. I enjoyed very much the helpful discussions with senior members in the community as well as the discussions with other young faculty members.

The conference provided a unique platform where I felt comfortable sharing my experience as a young faculty struggling with different aspects of a challenging job. It also provide an opportunity to hear about exciting experiments my colleagues are planning to pursue. I would heartily recommend this conference to any young faculty at a similar stage. It is a wonderful opportunity to network, exchange ideas, and explore collaborations. I hope that APS can continue this wonderful tradition.

The one-and-half day conference is well planned and densely packed. It was the perfect environment to meet colleagues at the same, early career stage. The talk format allowed me to learn about their research in a compact and efficient manner. Meal and refreshment breaks provided opportunities for informal conversations. I found it to be a thriving environment that encouraged exchange of academic ideas and discussions.

Panel discussions by senior faculties (including organizer) are extremely useful. I appreciated learning approaches aimed at resolving the challenges that I am currently facing in managing my own lab. Time permitting, I would even suggest future meetings to have an expanded version of such panel discussions.

It was great to meet everyone, learn about what they are doing, and exchange experiences. I think the mix of topics was good. It's always interesting to me to learn what's being done in systems similar to the ones I'm working on. That sparks ideas and provides the basis for new collaborations. The group size and length of the meeting were good, although I also wouldn't mind half a day or even a day more program to allow for more time to talk with everyone.

Besides that the other big draw for me, and I believe all the young faculty, to come to this meeting is the prospect of getting in touch with funding agencies and their program managers. Now unfortunately this didn't happen this time. But I hope for the next meeting they'll find their way there again. If traveling should remain a problem for them, maybe one could consider having a video conference with them, for example, via skype.

Thank you for hosting the meeting. I found it quite useful to be able to converse with some of the other new faculty members about their plans and strategies. The group was a nice mix both by topic, geography, and type of institution. It would have been helpful to have some funding program managers there, but I know you tried to get them.

Thank you for inviting me to attend the NLSC. I thought it was a useful meeting. I was impressed by the diverse group of scientists that were assembled and liked hearing about some of the things that are going on in the field of laser physics. I think the panel discussions were good and it was useful to hear about how the NSF grant proposals are reviewed. I think that expanding this type of discussion would be valuable. While I found the conference useful, I think I would have benefited more from it if I had attended earlier in my career; I am up for tenure this year and my material is already assembled. Nonetheless, I enjoyed the conference and appreciated the opportunity to present my work to a group of young scientists.

Thank you for giving me the opportunity to participate in the New Laser Scientist Conference. I really enjoyed hearing a summary of what colleagues across the country are working on and having the opportunity to network with them. I especially appreciated the panel discussions ('Being a laser scientist' and the impromptu 'Funding issues'). It's extremely valuable to receive honest, real-world advice on such topics from experienced faculty. Here's some food for thought: I think an environment like this could also serve as a good sounding board for proposal ideas. Maybe next time around one could think of a (voluntary) critiquing session, where the presenters could hand out 1-page proposal summary (maybe in break-out groups) and receive feedback.

Anyway, I appreciate your invitation and really enjoyed the meeting. I hope you are able to keep this conference going and continue to give new faculty the change to meet and exchange ideas.

Thanks so much for chairing the conference, for inviting me, and in particular, for offering good advice! I was just telling David Weld yesterday that I rarely find "advice" all that useful, but I found yours really insightful. In fact, Ive spent a lot of time in the lab this last week, turning knobs, running experiment, making sure I dont forget how to do it all on my own!

More feedback:

It was really good to learn about what other new professors are doing in related fields, just to get a flavor of what is going on around us.

It was also great to discuss lab-building issues with others (this was actually really nice!)

It was also nice to not feel pressured to have tons of results, as everyone was in the same boat.

Negatives:

I felt like there was a few missing people, but I dont expect you to invite EVERY young optics related researcher. And plus, it was already a lot in a short period of time, so more people might have been bad..

To be picky, I wasnt crazy about the location (I know this was not your choice!).

I thought the NLSC was a great opportunity to not only share some of my research plans with other laser scientists and get their feedback, but also to meet other young faculty in the same position as myself. The atmosphere was comfortable and the insight/perspective offered by the more "senior laser scientists" was useful.

For improvements I know the conference is designed to be a satellite for the OSA FIO/LS conference, but it would be nice if it did not overlap with the conference sessions. It was unfortunate the panel with program managers fell through - I was looking forward to that discussion. Other than this there is not much I would change with the format.

I thought the meeting was very nice - thanks for inviting me. There is little I can suggest changing. I think the advice from senior researchers (day 1) and funding pointers are probably most valuable. Bringing program managers would be great, but I understand is a bit restricted.

In my opinion, the meeting was very enjoyable. Even with all of the support in my department, it often feels like I am in this on my own. It is refreshing to get together with others in a similar situation as I am if only to realize that others have similar problems. I have been to a series of young faculty programs before, but the advantage of this one was that research was front and center. Other meets have focused on teaching, for example, which although important, is not the main stressor in my life. By targeting young researchers who share a common theme, a different community was created.

Given the constraint of a 1-day meeting, I do not think much should be changed. The one omission was related to funding. We talked briefly about funding, but due to the lack of attendance by program officers, there was no real information that we have not been exposed to before. In particular, based on what the organizers said and what program officers have said in the past, it appears that the funding landscape even for new faculty is shifting somewhat. Senior faculty often appear to say that there is much funding available for young faculty, but then if you look at the success rates for NSF Career and

DoD YIP programs, this statement cannot be true statistically! And yet, careers depend on it. These funding issues would have been useful to discuss in more detail and with real data (from gov representatives). It is a shared concern of the entire room, and it could have been a more impactful aspect of the program. Other than this, the program was quite successful.

Thanks to you for heading up the organization of the conference. I really enjoyed the chance to think about funding and meet others who are just starting out.

I know that this was organized to overlap minimally with the FIO/LS meeting - but to overlap sufficiently that we were encouraged to attend. But as a first-time faculty member at a liberal arts school, I couldn't come for the whole week. So I flew in the night before for the conference and left the day it ended. I certainly appreciated that it ended in time to catch a flight home and not require another night. But given that I needed to stay two nights to make the travel times, I would actually be interested in starting a couple of hours earlier to give a bit more time. I thought the 15/5 format was perfect, but I would consider adding a peer-review time. What I was thinking is that we could break up into small groups of 3-5 with others doing somewhat similar research, then we could provide some extra level of analysis of the proposals in a more private setting.

Certainly there can be a resistance to giving negative feedback during a talk, but funding agents will have no such resistance. Yet, the others at the conference are perfectly situated to help anticipate those questions and criticisms. One possibility would be to provide a time after each block for participants to provide written feedback to the speakers. In this case everyone would give feedback to everyone. Another possibility would be to have everyone divide up into small groups of similar research, give a 5 minute review of their talk and then have everyone in the group give verbal feedback to the speaker - possibly even at the level of individual slides.

I really enjoyed the meeting and it was great overall, not much to add to it.

The one thing that was missing was having one or more program managers from funding agencies, but I know that you had arranged for it.