

Annual report of SPIE Student Chapter of Montana State University “hv”, 2006

Our Chapter was formed in March-April 2006. Before the end of the spring semester we organized our Chapter Officers and made initial plans for a fall-semester activity.

Our officers were elected on March 09 2006:

- President: Nikolay Makarov, Ph.D. student in Physics
- Vice-President: Seth Humphries, Ph.D. student in Electrical Engineering
- Secretary: Trent Jackson, undergraduate student in EE
- Treasurer: Amin Nehrir, undergraduate student in EE

The next elections will most probably happen at our next meeting, which will be organized somewhere after the week of finals.

Activities

Several activities were conducted in 2006, including

1. tour to the local optics company, ILX Lightwave. ILX Lightwave President, Dr. Larry Johnson, arranged for several of his engineers to meet with us and discuss the technical and business challenges they encounter in their job (designing and selling laser diode instrumentation). The tour was attended by 9 student members and our faculty advisor.
2. participation of our members with individual and group presentations at the local Conference of the Optical Technology Center (OpTeC) in September 2006. [the complete agenda is available online at http://www.optec.montana.edu/Optec_mtg_2006.html].

A chapter-promotional and advertising BBQ was also discussed, but is deferred until warmer weather. Our Chapter President was at the meeting of SPIE Chapters at Optics&Photonics-2006. We also received free books from SPIE.

Finances

Our Chapter received \$500 support from SPIE and \$200 support from MSU. Right now we are working on starting bank account for our Chapter.

Publications and Conference Papers from 2006 that involve our student members (partial list based on input received by report deadline):

1. Drobizhev M., Makarov N.S., Stepanenko Y., Rebane A., “Near-infrared two photon absorption in phtalocyanines: Enhancement of lowest gerade-gerade transition by symmetrical electron-accepting substitution,” J. Chem. Phys., vol. 124, 2006, 224701.
2. Drobizhev M., Makarov N.S., Rebane A., Makarova E.A., Luk’yanets E.A., “Two-photon absorption in tetraazachlorin and its benzoand 2,3-naphtho-fused derivatives: effective symmetry of π -conjugation pathway,” fourth International Conference on Porphyrins and Phtalocyanines, 2-7 July 2006, p. 611.
3. Rebane A., Drobizhev M., Makarov N.S., de la Torre G., Torres T., “Modulation of two-photon absorption of asymmetricallysubstituted phtalocyanines by the position of inner protons (tautomerization) and structure of linking group,” fourth International Conference on Porphyrins and Phtalocyanines, 2-7 July 2006, p. 832.
4. Rebane A., Drobizhev M., Makarov N.S., Koszarna B., Gryko D.T., “The effect of electron withdrawing substituents on two-photon absorption properties of A_3 -corolles,” fourth International Conference on Porphyrins and Phtalocyanines, 2-7 July 2006, p. 833.
5. Drobizhev M., Makarov N.S., Rebane A., Wolleb H., Spahni H., “Very efficient two-photon induced photo-tautomerization in non-symmetrical phtalocyanines,” 9th Conference on Hole

- Burning, Single Molecule and Related Spectroscopies: Science and Applications, 24-29 June 2006, p. 35.
6. Drobizhev M., Makarov N.S., Rebane A., Wolleb H., Spahni H., "Phtalocyanine molecules with very strong two-photon absorption for 3D rewritable optical information storage," Optics&Photonics 2006, 13-17 August 2006.
 7. Makarov N.S., Drobizhev M., Rebane A., Wolleb H., Spahni H., Peone D., "Experimental characterization of two-photon materials for fast rewritable optical data storage," Optics&Photonics 2006, 13-17 August 2006.
 8. Drobizhev M., Makarov N.S., Rebane A., Stepanenko Y., Makarova E.A., Lukyanets E., de la Torre G., Torres T., "Two-photon absorption spectroscopy of phtalocyanines and related compounds," Optics & Photonics 2006, 13-17 August 2006.
 9. Makarov N.S., Drobizhev M., Rebane A., Wolleb H., Spahni H., Peone D., "Materials for 3D optical storage: two-photon access vs. one-photon background," OpTeC 2006, 18-19 September 2006.
 10. Makarov N.S., Drobizhev M., Rebane A., Wolleb H., Spahni H., "Experimental characterization of two-photon materials for fast rewritable optical data storage," OpTeC 2006, 18-19 September 2006.
 11. Pust N., Shaw J.A., "Imaging spectropolarimetry of clear, cloudy, and smoke-filled skies," OpTeC 2006, 18-19 September 2006.
 12. Nehrir A., Repasky K.S., "Extending the continuous tuning range of an external cavity diode laser," OpTeC 2006, 18-19 September 2006.
 13. Noonan E., Rupavatharam K., Babbitt W.R., Palassis C., Battle P., "Design and characterization of a frequency agile external cavity diode laser," OpTeC 2006, 18-19 September 2006.
 14. Green A.J., Dong Y., Nehrir A., Repasky K.S., Wolff R.S., "Creating of out-of-band communications channel with electro-optic transducers," OpTeC 2006, 18-19 September 2006.
 15. Jackson T., Repasky K.S., Wolff R.S., Green A.J., "Inline phase modulation for optical data transmission," OpTeC 2006, 18-19 September 2006.
 16. Shaw J.A., Jurich N., Nugent P.W., Way J., Tiensvold R., McMillan W., Wilson C., "Measuring atmospheric radiation with a Fourier transform infrared spectro-radiometer," OpTeC 2006, 18-19 September 2006.
 17. Repasky K.S., Hoffman D.S., Nehrir A.R., Jackson T., Keith C.J., Shaw J.A., Carlsten J.L., Spangler L.H., "Range resolved optical detection of honeybees by use of wing-beat modulation of scattered light for locating land mines," OpTeC 2006, 18-19 September 2006.
 18. Nugent P., Shaw J.A., Piazzolla S., "Characterizing a thermal infrared camera for measuring cloud statistics in Earth space optical communication paths," OpTeC 2006, 18-19 September 2006.
 19. Humphries S., Nehrir A., Repasky K.S., Carlsten J.L., Shaw J.A., Spangler L.H., "Differential absorption measurements of carbon dioxide and diatomic oxygen," OpTeC 2006, 18-19 September 2006.
 20. Dickensheets D.L., Overcast M.C., Himmer P., Yang V.X.D., Vitkin A., "Focus tracking in time domain optical coherence tomography using membrane mirrors operated near snap-down," OpTeC 2006, 18-19 September 2006.
 21. Group presentation of SPIE Student Chapter of Montana State University, OpTeC 2006, 18-19 September 2006.
 22. Pust, N. J., Shaw, J. A., "Dual-field imaging polarimeter using liquid crystal variable retarders," Applied Optics 45(22), 5470-5478, 1 Aug. 2006.
 23. Seldomridge, N. L., Shaw, J. A., Repasky, K. S., "Dual-polarization lidar using liquid crystal variable retarders," Optical Engineering 45, Oct. 2006, [doi:10.1117/1.2358636](https://doi.org/10.1117/1.2358636).

24. Pust, N. J., Shaw, J. A., "Polarization imaging and MODTRAN-P simulations of the atmosphere during clear, cloudy, and smoky conditions," DoD Polarization Sensing Workshop, Atlanta, GA, 5-6 Dec., 2006.

Grants and Awards received during 2006 by our members

1. Nikolay Makarov: SPIE Scholarship.
2. Paul Nugent: NASA Graduate Student Research Program fellowship.
3. Mike Obland: NASA Graduate Student Research Program fellowship.

Membership

Several of our founding members have graduated and left Montana State University and a few have let their student SPIE membership lapse; however, they will renew membership in the beginning of 2007. Several new members will join Chapter in spring term.

SPIE Student Chapter members for 2006

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