



The International Society  
for Optical Engineering



*Semi-Annual Report*  
*May-2007*

*Yerevan State University and National Academy of  
Sciences SPIE Student Chapter*

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### List of Members and Officers

| <b>N</b> | <b>Name , Last Name</b> | <b>Status</b>                |
|----------|-------------------------|------------------------------|
| 1        | Hrayr Azizbekyan        | President                    |
| 2        | Mikayel Arzakantsyan    | Vice President               |
| 3        | Narek Sisakyan          | Treasurer                    |
| 4        | Anahit Gogyan           | Secretary                    |
| 5        | Armen Sargsyan          | Member                       |
| 6        | Nikolay Balasanyan      | Member                       |
| 7        | Diana Antonosyan        | Head of Publicity Committee  |
| 8        | Anna Raymers            | Member                       |
| 9        | Karen Vardanyan         | Member                       |
| 10       | Lilit Hovhannisyan      | Head of Membership Committee |
| 11       | Narine Gevorgyan        | Member                       |
| 12       | Hrachya Lazaryan        | Member                       |
| 13       | Aram Davtyan            | Member                       |
| 14       | Hermine Garagulyan      | Member                       |
| 15       | Paytsar Mantashyan      | Member                       |
| 16       | Mikayel Nalbandyan      | Member                       |
| 17       | Stepan Hovsepyan        | Member                       |
| 18       | Gegham Zakharyan        | Member                       |
| 19       | Ruben Buniatyan         | Member                       |
| 20       | Vardan Margaryan        | Member                       |

## Activity Report

- During this half year our chapter members, participated in presentations and conferences at LT PYRKAL, Yerevan State University (YSU) and Institute for Physical Research (IPR) of National of Academy of Sciences of Republic of Armenia (NAS), we co-organized YOS summer-school (see bellow), organized 6 meetings, Invited Lecturer's Lectures and seminar given by Narek Sisakyan ( see photos).We have organized a meeting with academic staff of Physics Department to represent them passed, current and further activities of our chapter.
- Publicity committee of our Chapter with design direction of Diana Antonosyan, software direction of Karen Vardanyan and digital direction of Anna Raymers working on creating an official website for our Chapter, (created official logo seen on the first page of this report). Also we try to create a web among all Armenian scientific student groups to work collaborative and more productive. Especially, we maintain excellent and productive relations with YSU and NAS Optical Society of America (OSA) Student Chapter. We have done and plan to do a lot of activities together.
- Publicity committee with direction of Hrayr Azizbekyan and Anna Raymers created Group in Google Groups named SPIEArmenia, which makes contacting with each other and discussions of important problems open for all members that is one of key points for all our activity. We share the chapter specific files with each other (constitution, presented files, meeting results, useful links, members' information etc.), scientific and organizational discussions and the last achievement is that we organized online elections and open discussions of report, which is unbelievably good idea for democratic societies, we think it is a point that officers of other chapters would like to follow to make their work more trustable for all members. The result shows that this kind of relations much more productive and qualitative, it also shows to members their individual power and responsibility for result, scaling up self-consciousness
- SPIE Student Chapter has taken part in preparation works and realization of graduate examinations in schools. Mikayel Arzakantsyan was chosen as representative from our Chapter and took participation in mentioned above works.
- Membership Committee, in head of Lilit Hovhannisyan, organized introductory meetings with the students of Department of Physics and Department of Radio-physics of YSU with the aim to introduce them to chapter's activities, to discuss our further activities and to include more students in our works. Thus we recruited 9 new members and for current moment achieved 20 Members barrier, now they working on motivating them giving the clear image of the goals they can achieve together with the chapter. Now they preparing a brochure that will show the main activities and how they can be useful for students.
- Laser Technics and LT PYRKAL kindly agreed and supported us with workplace inside the institutions. YSU also supports us with Conference Hall and tools for seminars and meetings.
- In the scope of the SPIE Lecturer Grant, Doctor of Science Tigran Vartanyan from St.Petersburg State University of Information Technologies, Mechanics and Optics, Russia (tigran@vartanyan.com) has visited Armenia during 1-5 of May 2007. He gave 3 lectures in the framework of YOS under the Titles:
  - 1."Laser control of metal nanostructures".  
The talk was about self-organized metal nanostructures and the possibility to control of the shape of the nanostructures by a laser radiation.
  2. "Pure dephasing and quenching of collective electronic excitations in metal nanoparticles"  
The talk was about local field enhancement in the nanoparticle, which is a collective excitation of almost all electrons in the particle.

### 3. "Unexpected transients effect on the spectroscopy of stationary media"

The talk was about narrow feature inside Doppler broadened spectral line, when atomic vapor is confined in nano-size gaps.

Since Dr. Tigran Vartanyan is among the scientists who actively study nanostructures for the students of Armenian branch of SPIE it was a great opportunity to learn about these phenomena from the "first hands".

Also, there were many very fruitful scientific discussions. Dr. Tigran Vartanyan also explained many important details concerning self-organized metal nanostructures and control of the shape of nanostructures by a laser radiation.

Thus, we would like to thank the SPIE very much for the provided opportunity to be able to host Dr. Tigran Vartanyan in Armenia.



#### □ “Young Opticians School 2007(YOS-2007)”

The Young Optician School (YOS-2007) organized by the OSA and SPIE chapter members, generally supported by OSA, SPIE supported the school by Invited Lecturer and travel expenses of foreign SPIE Chapter members, YOS has been opened in YSU and held in IPR, May 2-7, 2007.

The school program covered all aspects of optics with focus on new and exciting developments and results in physics of coherent light sources, nonlinear and quantum optics, laser spectroscopy of atoms and condensed matter, laser instrumentation, crystal growth and thin film preparation of inorganic materials for quantum electronics and integral optics.

The summer school was open and brought together nearly 50 young opticians and lecturers, counting 19 foreigners from Latvia, Romania, Russia, Bulgaria, Croatia, France, US and Germany. That was great opportunity for youths working on optics to be collected together and to take courses and lectures from international level professors involved in optics and providing lectures, seminars, discussion with leading specialists in modern optics, and it is big fun to established friendship with .

For more information see website of YOS-2007 <http://www.ipr.sci.am/yos/>

The following list shows that our Chapter has actively involved in organizational works and realization of YOS.

Organizing Committee of YOS (SPIE Members are underlined)

David Sarkisyan (IPR, Ashtarak, Armenia) – Chairman  
Rafik Hakobyan (YSU, Yerevan, Armenia) – Co-chairman  
Aram Papoyan (IPR, Ashtarak, Armenia) – Co-chairman  
Nikolay Balasanyan (YSU, Yerevan, Armenia) – Head of project  
Narine Gevorgyan (IPR, Ashtarak, Armenia) – Coordinator  
Diana Antonosyan (YSU, Yerevan, Armenia)  
Mikayel Arzakantsyan (YSU, Yerevan, Armenia)  
Gagik Bunatyan (LT-PYRKAL, Yerevan, Armenia) (Advisor of SPIE Chapter)  
Hermine Gharagulyan (YSU, Yerevan, Armenia)  
Nataliya Lisitsyna (BMSTU, Moscow, Russia) (SPIE BMSTU Chapter)  
Vardan Margaryan (YSU, Yerevan, Armenia)  
Artsrun Martirosyan (IPR, Ashtarak, Armenia)  
Gevorg Muradyan (YSU, Yerevan, Armenia)  
Rafayel Pemuzyan (YSU, Yerevan, Armenia)

Besides organizing works, our members, listed below, presented their Posters,

Diana Antonosyan - Squeezing of Multiple Modes in Periodically Poled Crystals  
Mikayel Arzakantsyan - Thermo mechanical Oscillations in Nematic Liquid Crystals  
Nikolay Balasanyan – The Selective Reflection from Interface of Highly Parallel Window and Cesium Vapor  
Narine Gevorgyan – Quantum Dissipative Chaos in Pulsed Parametric Oscillator  
Anahit Gogyan – Quantum Beats in UV Light Generation Via Hyper-Raman Scattering and Four-wave Mixing by Fs Pump  
Hermine Karagulyan – Experimental Investigation of Optical Nonlinearity of Dye-doped Nematic Liquid Crystals  
Paytsar Mantashyan – Resonantly Enhanced Parametric Four-wave Mixing  
Anna Reimers – A new Robust Frequency “Reference” for Atomic Transitions  
Armen Sargsyan – Dark Optical Resonances and Velocity Selective Optical Pumping Resonances in Micro-meter and Nano-metric Thin Atomic-Vapor Layer  
Karen Vardanyan – Research Photocurrent of n-p-n(p-n-p) Junction of Bipolar Transistor Using Laser Microscopy

During YOS a new contacts and relations with SPIE and OSA Chapters all over the world were established. A lot of further plans and activities were discussed. Our Chapter really hopes that all benefits remained from YOS will help us in the future to make work of our Chapter and, not only it, more productive and collaborative. See more in “Further Activities.”

## Pictures

First two days of YOS lectures have taken place in *Conference-Hall of Department of Physics of YSU.*



Remained lectures have been held in Ashtarak, in *Institute for Physical Research*



In the first day of Poster Presentation the weather in Ashtarak was so good, and the nature near the physics institute was so wonderful, that participants decided to present their Posters in the Garden!



That was very new and sensational idea, and everybody liked it.





The fresh air, trees and sun only stimulated our scientific discussions!



In the end, everybody was very happy!



After Poster Presentation we decided to have a little fun, and began to play "Zilina"





There were a lot of social events and excursions during YOS, which making participants and chapters closer. Participants visited many places of interest in Yerevan and Armenia.



Also they have visited the *Monument of Genocide in Tsitsernakaberd Memorial Complex and the Museum of Genocide*



Our guests were admired with the *lake Sevan*



We went to *Garni and Geghard* also



And in the end of course farewell party!



## Financial Balance

Starting balance \$205

Expenses during YOS-2007 \$120

Seminars and Meetings \$60

Transportation to other presentations \$15

Other Expenses \$10

Total Expenses \$205

Closing Balance \$0

## Further Activities

The nearest plans of program committee is the following

1. Lecturer seminars, organization of selected seminars of leading researchers in field of optics in Armenia, and to help students to find a scientific advisors, job or just to be in touch with the latest works in field of physics in Armenia,
2. Student seminars, organization of seminars that will help students to examine and prepare their speech by presenting their presentations in informal and friendly atmosphere
3. Presentations of undergraduates, organizing a
4. Presentations and demonstrations at schools(especially targeted to Distant schools and universities),
5. Accomplish the projects of Internet Site and informational brochures,
6. Continue the work with the help of OSA Chapter for the YOS project
7. Considering a Young Opticians Congress (YOC-2008). It is planed to be held in Russia. We plan to support in organization of YOC with other SPIE and OSA Chapters. YOC-2008 has an aim to gather SPIE and OSA Chapters' leaders and members all over the world to present their scientific and community works. We hope that this kind of informal "boiling pot of ideas" during YOC will lead to new and productive relations between regional Chapters
8. Participate in Leadership Workshop 2007 in San-Diego to present our achievements, to discuss with other leaders the activities they make and the results they gathered, look for possible collaborations relations.