Organic electronics as a multidisciplinary field requires particularly vast body of expertise in solid-state physics, organic chemistry, physical chemistry and etc. Thus IFSOE had education as its primary focus. Every day the first part lasted until noon and consisted of four hour-long lectures.

The core of the IFSOE programme revolves around such topics as organic solar cells, organic transistors, light emitting devices as well as new materials for organic electronics. The photophysics was particularly emphasized with a discussion on organic semiconductors and elementary excitations in them, such as excitons, polarons and polaritons, which determine the performance of organic electronic devices.

"Most concepts were new to me and much of terminology seemed alien at first" says Timur Burganov, a Ph.D student of A.E. Arbuzov Institute of Organic and Physical Chemistry, Kazan Scientific Centre Russian Academy of Sciences. "The first few days were rather hard ones, but then I had quickly adapted and caught on with the rest. Majority of lecturers design their explanations to stem directly from the most basic concepts making it significantly easier to understand. They also highlight latest developments in their respective fields and provide us with useful external references. As a result, not only did I improve the understanding of my initial scientific interest but I also had gathered a certain amount of knowledge of fields relative to mine. Besides, I was strongly impressed with how easy knowledge like that can be practically applied. Organic light emitting diodes, field-effect transistors, solar cells - the required prototypes for these devices can be made in a laboratory, which allows us to verify or refute our hypotheses and assumptions independently and in a swift fashion. I look forward to sharing this newly-acquired experience with my local professional community."

At the second part of the day, young scientists presented their research during oral and poster sessions. And vast number of the most interesting and the most fertile discussions ultimately took place in the halls of the building and outdoors, also during lunch and dinner, and were informal in their very nature. Furthermore, owing to the sponsorship of Moscow City Government, Russian Foundation for Basic Research, Dynasty Foundation and other organisations the IFSOE had quite versatile and content-rich cultural programme.

For those who took part in the school, various activities were organised, including but not limited to: a bus-tour out-and-around Moscow, a trip to New Jerusalem, a reception with live classical music, soccer matches in the late evenings and an exquisite farewell dinner party. All of these contributed to a relaxed and productive atmosphere which had its strong impact on the audience integrity.

The IFSOE had been organised by Sergey Ponomarenko (Enikolopov Institute of Synthetic Polymer Materials) and Dmitry Paraschuk (Lomonosov Moscow State University).

"We got this idea about IFSOE exactly a year ago" recalls Sergey Ponomarenko. "The popularity of organic electronics as a field of research spreads rapidly among scientific communities throughout the world. In Russia, a number of laboratories and scientific groups working in this field is growing steadily. Keeping in mind that organic electronics is emerging, the greater part of contributors are quite young. The number of various worldwide scientific conferences and summer schools on organic electronics is just over a dozen, and this led us to realise the necessity of founding one of our own which came to be known as IFSOE. This project includes a world-class scientific conference as well as a school for under- and post-graduates and those aspired. To do our best at expanding the horizons and in order to have the opportunity to invite our colleagues from all over the world to share knowledge and experience we had chosen English as a school language."

Today organic electronics gradually flows into commercialization. The unique features of its devices such...
as flexibility, semitransparency, lightweight and possible biodegradability make a significant difference in our lives. For instance, organic solar cells could bring the electricity to remote areas and settlements - for a considerate price their inhabitants may power-up lightbulbs and other appliances or charge their cellulares.

“Organic electronics is a developing scientific area with very promising practical potential” - adds Dmitry Paraschuk. “As a critical mass of researches had already been reached in Russia - we felt obliged to group them into the IFSOE team. The potential for organic electronics in Russia is remarkably high - when it comes to physics and chemistry, we have outstanding educational traditions from the Soviet times. That is essential to this multidisciplinary field, where chemists, physicists and engineers should reach a sense of mutual understanding that can be achieved by having an elaborate experience in each other’s respective areas of scientific interest. Our current aim is to boost organic electronics in major research centers, such as ones in Moscow, Saint-Petersburg, Novosibirsk and Kazan.”

The unparalleled excitement of an emerging research field coupled with an anticipation of an upcoming breakthrough could be felt in the air all around. Pop-eyed attendees filled the halls with jokes that consisted mostly of puzzling technical jargon. This is how scientific work is done. That is the reason why the organizers announced that International Fall School of Organic Electronics 2015 (http://ispm.ru/ifsoe-2015/) is being intensely prepared. New topics will be introduced, new lecturers will be invited, hopefully resulting in fiery debates.


Ivan, your work has been won as the best in the poster session this year. Did you consider giving a full oral report?

Well, results that have been presented at the poster session are a kind of come-see for our scientific group. A manifest of what can do as synthetic chemists. Despite that, I think that advertising ourselves and our projects via oral public presentation is rather inappropriate.

Well, but you still do not consider the trip you’ve made to be vain, do you?

Definitely not! We have absolutely made a connection and shared things among us - I think there are at least two probable future collaborations that just might start from what was said and done during the event. Collaborations in science is a must! I, for one, synthesize compounds for organic solar cells, but we do not have any sum simulator for testing the efficiency of our solar cells. What should we do?! Should we buy them ourselves? Should we start with them? Should we give it to more experienced colleagues of ours? Obviously, we choose a second option!

Apart from collaborations in science, material science in our case, you’d certainly need practice. Speaking of manufacturing in Russia, are there companies that are ready to feature organic electronics as of now? What’s your take on that?

That had already happened! One such company had even spun off from our own laboratory - apart from photovoltaics we also work with electrophoretic coating. Recently, this company has been developing self-adhesive film with tunable transparency, which can be adjusted by simply pushing the button. This film barely has any limits application-wise - it has its place in the smart-home projects, rearview mirrors and so on and so forth. There is more to it, hence it’s production is based on several well-known viologen patents. Here I might add that the electronic component has to be valued just as much as the chemical one - digital control certainly is required for such a sophisticated device to work properly, as is temperature, weather and light sensor-based feedback. Needless to say, adequate maintenance and caution are advised for it to pass quality control examinations and give satisfying performance and durability.

From the standpoint of a customer, which organic electronics devices do you lack in your everyday life?

Well, I’ll put it that way - I have an OLED display phone which still excites me, I enjoy visual art and I’m into design. That’s the reason I have pretty high expectations in terms of visual performance. In that respect, I am more than content with what OLED has to offer - bright colours, great saturation and state-of-the-art image quality. This is aesthetically pleasing, dynamic and low on energy consumption. Shall it be taken away from me, I would certainly feel out of place.

Oleg Kozlov, winner of "best oral report" nomination, Zernike Institute for Advanced Materials, University of Groningen and International Laser Center and Faculty of Physics of M.V Lomonosov State University

Oleg, if you were to judge, what kind of organic electronics devices would be the most convenient in everyday life?

Dmitry Paraschuk (when lecturing) has a habit of giving the very same example about a not-too-distant-future carton of milk with built-in organic display which indicates how fresh the milk is. I would not mind having that one! Frankly, predictions as to where the organic electronics devices would find themselves upon emerging is highly
questionable. Who on earth could have known that Internet would be such a big thing today? Presently, semiconducting organics is expensive and you wouldn’t really call that mass production as of now, but sooner or later things are bound to change. It is then that we will see the true part that organic electronics shall take - whether it is a global and prominent technology capable of replacing Si-electronics or merely a peculiar one, reserved for some distinctive niches such as "smart" milk cartons or biodegradable packaging.

Putting those questions of use aside, are there any kind of global but purely theoretical problems in the field of organic electronics? Is there any debate?

Yes, there are a lot of unanswered questions, none of them are global or overarching though. To give you a hint, it is still utterly unclear how does bulk heterojunction work. You throw a bunch of molecules, then a bunch of other ones and watch them mix and assemble by themselves in some fashion and thus get the result. Charges can be separated or transported in a system like that.

Could you then tell me what would be the first science-related question you would ask if you were to wake up 500 years later after being cryogenically frozen?

That’d be "Have you built a teleport yet?" or "Have you broken the speed of light record?"

So, not exactly about bulk heterojunction or the efficiency of organic solar cells?

Nope! It’s only human! Besides, I think answers to these latter questions will be found soon enough.

Learn more at http://www.ispm.ru/ifsoe-2014/