

Report on the XIV All-Russian School on Structural Macrokinetics for Young Scientists

The Institute of Structural Macrokinetics and Materials Science (ISMAN) of the Russian Academy of Sciences (RAS) has annually held All-Russian Schools-Workshops on Structural Macrokinetics for young scientists since 2003. The areas of interest include a wide range of issues related to the studies in the field of macrokinetics of combustion and explosion processes, self-propagating high temperature synthesis (SHS), the use of these processes to produce new materials and goods. In addition, the current problems of materials science, thermodynamics, chemical kinetics, and metallurgy are considered.

From 23 to 25 November, 2016 ISMAN held the XIV All-Russian (with international participation) School-Workshop on Structural Macrokinetics named after Academician A.G. Merzhanov for young scientists. Like all the previous ones, this School was timed to coincide with the birthday of Academician A.G. Merzhanov, an outstanding, world-famous scientist, the founder of ISMAN and SHS-technology, so after his death it was decided to call this event after his name. The School organizers were: the Federal Agency of scientific organizations, Russian Foundation for Basic Research (RFBR), Russian Academy of Sciences, Institute of Structural Macrokinetics and Materials Science of Russian Academy of Sciences, Tambov State Technical University and the National Research Technological University "Moscow Institute of Steel and Alloys" (MISA). The School was financially supported by RFBR.

A positive feature of the XIV School was that it involved in its work the representative delegations from the leading Russian universities: the National Technological University "MISA" (Moscow), Tambov STU (Tambov), USATU (Ufa), Samara National Research University named after S.P. Korolev (Samara). It is these universities with which ISMAN has cooperated for many years in the field of education and science, has supervised their postgraduates and Master students, has had joint projects and grants. The very fact of active involvement of these institutions in the work of the Youth School testifies to mutually beneficial cooperation. In addition to these universities, there were presented the reports of young scientists from Moscow State University, Moscow Higher Technical School named after Bauman (Moscow), Bryansk STU (Bryansk), Belarusian National Technical University (Minsk, Belarus), the Institute of Combustion Problems (Almaty, Kazakhstan), Japan Aerospace Exploration Agency (Sagamihara), Vladimir SU (Vladimir). Traditionally, the School was attended by our colleagues from the Institute of Problems of Chemical Physics (IPCP) and the Institute of Solid State Physics (ISSP) (Chernogolovka).

It should be emphasized that among School participants there were also schoolchildren from the city of Chernogolovka, who made three reports of topical interest. Of particular interest among the audience were the reports by the pupils of the 75th and the 82nd secondary schools of Chernogolovka E. Bogdanova, M. Urvantsev, L. Popov, S. Bogdanov "Energy hunters: physics and technology of energy capturing from the outside world" and Ya. Salganskaya, N. Klassen "Transformations of plant materials structure and their division into useful components". The studies of such young researchers had been performed at a remarkably high level.

The School program included lectures by renowned scientists:

- "A new generation of high-temperature alloys based on refractory materials" by M.I. Karpov, D. Tech. Sc., Corresponding Member of RAS, Head of the Laboratory of Materials Science (ISSP, RAS, Chernogolovka);
- "The azide technology of SHS ceramic micro- and nano-powders" by A.P. Amosov, D. Sc. (Phys.-Math.), Professor, Head of the Department "Metal Science and Powder Metallurgy" (Samara State Technical University);
- "The wave deformation and combined hardening of metallic materials" by A.V. Kirichek, Professor, Vice-Rector for Prospective Development (Bryansk State Technical University);
- "Products of UHMWPE-nanocomposites obtained by die-forging in a solid phase" by G.S. Baronin, D. Tech. Sc., Professor, Head of the Science and Education Center of TSTU-ISMAN (TSTU, Tambov).

The delegation of lecturers from Samara National Research University named after Academician S.P. Korolev also participated in the work of the School. At the meeting in the framework of the School there were discussed the



issues of joint research in the aerospace field. Some aspects of this cooperation were covered in the report by Dean of the Faculty of Engineering and Technology (Samara National Research University named after Academician S.P. Korolev) M.V. Hardin “New horizons of the cooperation between Samara University and ISMAN”.

It has become traditional to publish the Proceedings of the School before it starts. Compared to the collections of papers of the first Schools, the volume of the collection of the XIV School quadrupled, which indirectly testifies to an increase in the popularity of the event.

Each year, the School holds a tennis tournament for the Cup of Rector of the School. Typically, several teams participate and are involved in a tense competition. This year, as well as last year, it is the veterans who have won the Cup.

The closing ceremony of the School was performed by Mayor of Chernogolovka O.V. Egorov, who awarded the young authors of the most interesting reports with diplomas of Mayor and Rector of the School, Corresponding Member of RAS M.I. Alymov. In addition, all the participants of the School were presented with a souvenir – a T-shirt with the logo of the name of the last book by A.G. Merzhanov “It is better to be fit than free”. Non-resident participants of the School were accommodated (free of charge) in a comfortable dormitory of ISMAN Research and Education Center. Nobody was charged with the registration fee. Free lunches, coffee breaks with pies and pizzas, as well as a gala reception organized by great culinary experts were excellent!

The participants and guests, who spoke at the closing ceremony, thanked the organizers and emphasized that one of the merits of the School dedicated to a new field of science – structural macrokinetics – which is very interesting both in scientific and applied respects, is the establishment and expansion of relations between young scientists, who had an excellent opportunity to communicate with each other.

*The program and abstracts of the participants of the School-Workshop can be found on the website
<http://www.ism.ac.ru/events/AllRussiaSchool14/proceedings14.pdf>*

Alexander M. Stolin

*Doctor of Physics and Mathematics, Professor,
 Head of Laboratory at the Institute of Structural Macrokinetics and Materials Science,
 Chernogolovka, Russia*

Mikhail I. Alymov

*Corresponding Member of the Russian Academy of Sciences,
 Director of the Institute of Structural Macrokinetics and Materials Science,
 Chernogolovka, Russia*