



Transnational News

The Fifth International Kharkov Symposium on Physics and Engineering of Microwaves, Millimeter, and Sub-Millimeter Waves (MSMW'04)

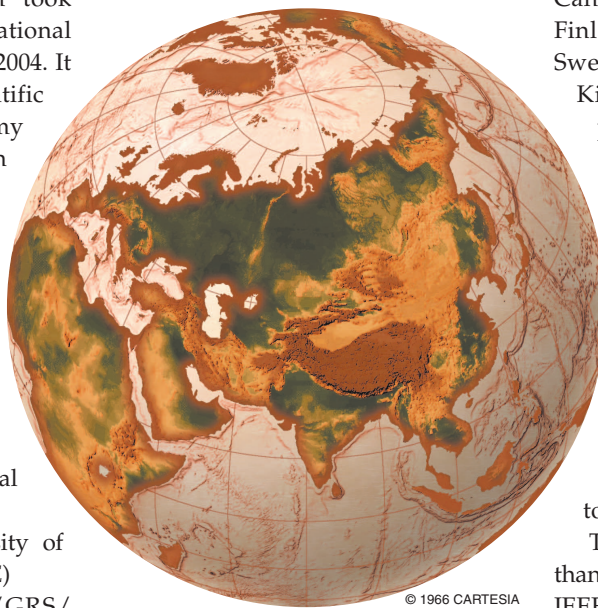
■ **Józef Modelski, Associate Editor**

Having had the pleasure of presenting an invited paper at the Kharkov Symposium, I would like to summarize highlights of the symposium in this short report.

The MSMW'04 Symposium took place at the Kharkov National University, Ukraine, 21–26 June 2004. It was organized by the Scientific Council of the National Academy of Sciences of Ukraine (NASU) on radio-physics and microwave electronics, in cooperation with the following organizations:

- A. Usikov Institute of Radio-Physics and Electronics of NASU (IRE NASU)
- Institute of Radio Astronomy of NASU (IRA NASU)
- V. Karazin Kharkov National University (KhNU)
- Kharkov National University of Radio Electronics (KhNURE)
- IEEEAP/MTT/ED/AES/GRS/NP/EMB Societies East Ukraine Joint Chapter
- IEEE MTT/ED/COM/CPMT/SSC Societies Central Ukraine Joint Chapter
- IEEE MTT/ED/AP/CPMT/SSC

Societies West Ukraine Joint Chapter
• National URSI Committee of Ukraine.



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The working days of the conference were 22–25 June. Each day, the conference started with a plenary session of five invited lectures. After that, three or four parallel day-long sessions with regular papers were taking place. All the papers were presented in English. Social events made up 26 June. The number of registered participants was

248, including 165 from Kharkov, 26 from the rest of Ukraine, and 30 from Russia. The following countries were also represented: Belarus, Lithuania, Japan, Mexico, Taiwan, Germany, Canada, Czech Republic, Belgium, Finland, The Netherlands, Poland, Sweden, Turkey, and the United Kingdom. In total, around 240 papers out of 281 in the program were presented. At the plenary and topical sessions, 28 invited papers were presented. A two-volume, over 960-page proceedings had been published. The symposium program contained papers submitted by world-reknown experts in microwaves and shorter wavelength science and technology that are very useful and important to the Ukrainian participants.

The symposium became possible thanks to the support of sponsors: URSI, IEEE Region 8, the IEEE ED and MTT Societies, and EuMA. A new feature of this year's MSWM'04 was the support of the European Microwave Association (EuMA), which donated a special grant to the best young scientist papers. A very wide spectrum of topics was presented: electromagnetic theory and numerical simulations; waves in semiconductors and solid state structures; microwave superconductivity; vacuum

Józef Modelski is with the Warsaw University of Technology in Warsaw, Poland, j.modelski@ire.pw.edu.pl.



The opening ceremony.



The technical session in the Senate Room



The Plenary session.

sources and solid state devices; quasi-optical techniques and terahertz technologies; antennas, waveguides and integrated circuits; radio spectroscopy and electromagnetic metrology; scientific, industrial and biomedical applications; radio astronomy and Earth's environment study; R-functions, atomic functions wavelets and fractals; novel radar technologies.

On 21 June, Western participants were able to pay a visit to IRE NASU and see the laboratories of the departments of quasioptics, computational electromagnetics, and microwave spectroscopy.

MSMW'04 started on 22 June 2004 with the opening ceremony at the Kharkov National University. The first to address the participants was MSMW'04 chair, director of IRE NASU, vice-chair of the Ukrainian National URSI Committee Prof. Vladimir M. Yakovenko. He was followed by representatives from the other organizations behind MSMW'04: Vice-Director of IRA NASU Prof. Valery M. Shulga; Vice-Rector of KhNU Prof. Ilyi I. Zalubovsky; and Vice-Rector of KhNURE, Prof. Nikolai I. Slipchenko. The vice-major of the city of Kharkov, Prof. N. Soroka, told the audience about the 350-year historical and cultural heritage of Kharkov. The next to make a welcoming speech was Prof. Anatoly A. Kirilenko of IRE NASU, who spoke in the name of the IEEE AP/MTT/ED/AES/GRS/NPS/EMB Societies East Ukraine Joint Chapter. He emphasized the very important contribution of the Chapter to the success of MSMW'04. Prof. Alexander I. Nosich of IRE NASU addressed the participants on behalf of the MSMW'04 Organizing Committee.

During the closing ceremony (25 June), six awards founded by the European Microwave Association were attributed to the best young scientist for papers presented at the symposium.

The prizes went to:

- Artem Boriskin, for the paper "Resonance Lens Antenna Analysis for MM-Wave Applications"
- Andrey Rusanov, for the paper "Electromagnetic Waves in a Rectangular Plasma Waveguide and their Interaction with an Electron Beam"

- Nataliya Don, for the paper "Computation of Mode Bases for Waveguides with Complicated Cross-Sections"
- Vyacheslav Zemlyakov, for the paper "Mode Transformation Due to Curvature and Diameter Variations in Smooth-Wall Circular Waveguides"
- Anna Rudiakova, for the paper "Fifth-Harmonic Peaking Electromagnetic Stop-Band Network for Polyharmonic Power Amplifiers"
- Ivan Karbovnyk, for the paper "Time Domain Dielectric Relaxation Spectroscopy of the Ag₂CdI₄ Superionic Conductor."

In addition to awards for oral papers, a special award was established by the IEEE East Ukraine Joint

Chapter for the best poster paper presented at the symposium. This award was given to Elena Smotrova.

The final closing address was by Prof. Vladimir M. Yakovenko, who announced that the next symposium, MSMW'07, will be held again in Kharkov in June 2007.

Apart from the technical sessions, several interesting social events for the participants took place:

- on the first evening, a welcome party took place, with Ukrainian champagne
- on the second day, a bus city tour was organized, enabling participants to get acquainted with the history of Kharkov, the second-largest Ukrainian city. Remarkable historical buildings and monu-

ments, such as Assumption Cathedral, WW II Memorial, and "Gosprom" complex (built in the 1920s) as an example of constructivism style in the architecture of the early Soviet period were visited

- on the third evening, a symposium banquet was held, accompanied with live music and dancing.

On behalf of the AdCom I would like to congratulate the local Kharkov microwave community as well as all MTT-S Ukrainian Chapters for the success of the event, as regards the technical session as well as social events, both of which were very well attended. MSMW has become one of the most important conference organized in Ukraine as well as in Former Soviet Union countries.



Student HIGH EFFICIENCY POWER AMPLIFIER Design competition



MTT-5 (High Power Microwave Components Committee)

is pleased to announce a new competition, which will take place at IEEE MTT-S International Microwave Symposium (IMS), in 2005.

The competition is open to all students and graduate students registered at an educational establishment. The competitors are required to design, construct, and measure a high efficiency power amplifier, at a frequency of their choice above 1 GHz but less than 20 GHz, and having an output power level of at least 5 watts, but less than 100 watts. The winner will be judged on the design, which demonstrates the highest power added efficiency (PAE). The power amplifiers must be brought to IMS2005 where they will be tested to verify their performance. A representative of the design group must be present at the testing to assist with the evaluation. The winner will receive a prize of \$1,000, and will be invited to submit a paper describing the design for the MTT Microwaves Magazine.

Questions can be sent to Kiki Ikossi at <ikossi@ieee.org>.

PA Competition Rules:

- 1 The power amplifier (PA) design may use any type of technology, but must be the result of student effort both in the amplifier design and fabrication.
- 2 The PA mechanical design should allow for internal inspection of all relevant components and circuit elements. The RF ports should be standard coaxial connectors, type N or SMA.
- 3 The PA must operate at a frequency of greater than 1 GHz but less than 20 GHz, and have an output power level of at least 5 watts, but less than 100 watts.
- 4 All amplifiers should require less than 25 dBm of input power to reach the output level required for maximum efficiency.
- 5 Amplifier entries should be submitted with measured data, including dc supply requirements, frequency, RF drive and output power, and PAE. PAE will be defined as $(RF_{out} - RF_{in})/dc$. Measurements will be under CW operation at room ambient conditions into a 50 ohm load. Only the power at the fundamental CW frequency will be included in the measurement of output power.
- 6 The decision will be based solely on the amplifier's power added efficiency measured during official testing at IMS2005. The judges reserve the right to give favorable consideration for special awards to performance characteristics of special merit, such as higher bandwidth or exceptional workmanship. The decision of the judges will be final.
- 7 Contestants must notify the MTT-5 committee by e-mailing to Kiki Ikossi <ikossi@ieee.org> of their intention to compete in the contest before April 1, 2005. This notification should include information on the University or educational affiliation of the entry, and the PA's approximate power level, dc voltage requirements and frequency of operation.

