

# The 5<sup>th</sup> European Conference on Thermoelectrics

Odessa House of Scientists, Odessa, Ukraine  
September 10-12, 2007

Organized by:

- Thermion Company
- Odessa State Academy of Refrigeration

## PROCEEDINGS



The European Thermoelectric Society

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# ECT2007

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## CONFERENCE ADDRESS

Odessa House of Scientists  
Sabaneev Bridge, 4  
65026 Odessa - Ukraine

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## Professor Vladimir S. Martynovsky – Founder of Odessa School on Thermoelectrics

Among brilliant representatives of native science whose life and creative work were tightly connected with Odessa and with formation and evolution of Odessa State Academy of Refrigeration, a remarkable place belongs to Professor V.S. Martynovsky, the outstanding scientist in the field of thermodynamics, refrigeration and heat-and-power engineering.

V.S. Martinovsky was born 22 May 1906 in Moscow. His course of life and achievements are as interesting as edifying. When being a boy, he went to the North infatuated with the romanticism of sea travels, worked hard as a fireman, motorman and a worker. Outstanding intellectual faculties and thirst for knowledge led him to workers' faculty and then to Odessa Polytechnic Institute. In three years after graduating from the institute he becomes assistant-professor and then the acting director of the institute.

During World War II he served as a Navy officer, participated in the defence of Sevastopol and North Caucasus as a head of defence works. After World War II he devoted all his time and strength to formation of higher education. He was one of founders of the Odessa Institute of Marine Engineers – the biggest in the country institute of such specialization. He initiated also creation of the Odessa technological institute of refrigerating industry (today Odessa State Academy of Refrigeration - OSAR) which he led as a director during 25 years up to his last days in 1973. In 1959 he founded the Problem Scientific-Research Laboratory on Refrigerating Industry which became soon the biggest scientific laboratory in the Ministry of Education of the former USSR.

V. Martynovsky was well known abroad as an organizer of scientific researches and education in developing countries. Being the head of the group of soviet professors in India, he was one of the founders of Bombay Technological Institute. From 1960-1964 he was an UNESCO official occupying position of acting director of the Department of Education and Applied Science whose goal was the creation of new high schools in developing countries. Being many years the vice-president of International Institute of Refrigeration, V. Martynovsky properly represented Russia and Russian science at numerous international congresses on refrigeration in different countries.

V. Martynovsky had a wide spectrum of scientific interest, he was a person of highest culture with truly encyclopaedic knowledge in all spheres of human activity, including natural sciences and technique, general history, medicine, literature and arts. In addition to his managerial abilities, he was a prominent scientist and pedagogue, author of many scientific monographs and manuals. He possessed a wonderful talent of science prevision, turning his pupils efforts to most prospective directions, generously sharing his ideas, experience and knowledge, carrying away with his truly youth enthusiasm. He was by right the beginner and founder of all scientific trends in the Academy such as thermodynamics of refrigeration (including thermodynamics of irreversible processes), turbo-air refrigerating machines with application of the used aviation engines, Rank-Hilsh vortex tubes, McMahon and Vuilleumier refrigerators, free piston compressors, Phillips refrigerators working on reversed Stirling cycle, desolination of sea water using refrigeration, thermoelectric cooling.

In particular, the solid state thermoelectric cooling occupied his imagination most of all: no moving parts - only electrons move! This was worth to work on! Researches in this field were started in 1959 and last to our time. During this period the Odessa school of thermoelectrics was formed, which made notable contribution to thermoelectric science and application. Researches in the field of thermoelectrics were carried out and Bismuth Telluride based materials were created and applied in industry for mass production. The theoretical methods of optimal control in thermoelectricity based on Pontryagin's principle of maximum were developed and series of fundamental variational problems were solved concerning functionally graded TE materials and thermoelectric cascades with maximum performance. These theoretical and technological researches resulted in creation of novel thermoelectric micro-coolers compatible with microelectronic and electro-optic components on dimensions, required temperatures and heat flux density. Since 1994 researches in OSAR are carried out in cooperation with the Thermion Company which arose from the OSAR research group of thermoelectrics. This period is characterized with considerable intensification of the researches and achieving new important results. In many respects this is connected with new times when the international integration of our scientists became available.

A year ago, the scientific community of Odessa celebrated Professor Martynovsky's birth centenary. During his life he was awarded with many honorary ranks, scientific titles and government awards. But we think that the main entire of his life are his scientific works and ideas, which are being kept on and developed by his scientific school.



Dr. Vladimir Semenyuk – ECT2007 Chairman  
Professor Alfred Tsykalo

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