Tribute to Professor Olga Martynova

Olga Isakovna Martynova was born on January 24, 1916 in the Ukrainian village of Khortitsa. After finishing seven years in secondary school she entered the Chemical College in Zaporozh'e. In 1933 after graduating from the College she first worked as a laboratory assistant in the Elektrostal Steel Plant, which was part of the huge Zaporozhye Steel organization, and then at the laboratory of the famous Dneprovskaya Hydroelectric Plant, which was first commissioned in 1932. This was her first experience with power generation.

In 1936 Olga moved from the Ukraine to Moscow, and in 1937 started work as a chemist at the All-Union Research and Design Institute on Water Supply, Sewage, Hydrotechnical Construction, and Engineering Hydrogeology, which was known simply as "VODGEO" during the Soviet period. In 1939 she entered the Mendeleev Chemical Technology

Institute in Moscow, but also continued to work at "VODGEO" until 1942. She graduated in 1944 from the Mendeleev Institute with an Engineering Diploma in Chemical Technology, and then joined the Moscow Power Engineering Institute (MEI) as a researcher. She remained at MEI for the rest of her life in positions of increasing responsibility: from 1946 until 1953 as an Assistant, and from 1953 until 1960 as a Senior Lecturer in the Chemistry Department. In 1960, Professor Martynova became the Head of the Chemistry Department, and then from 1965 until 1989, the Head of the Water and Fuel Technology Department. After she stepped down as the Head in 1989, she remained as a Professor in the Department until 2002. MEI is one of the most prestigious institutes in the Electricity Generation and Power field in the world, and perhaps the only University totally dedicated to training undergraduates in all aspects of Power Plant Technology. During the Soviet times, MEI trained most of the technical people in every Soviet fossil and nuclear power plant in all fields. Most power plant chemistry departments are managed by, and have staff trained by, Professor Martynova.

In 1952 Olga completed her Ph.D. thesis at MEI on "An Investigation of the Removal Processes of Organic Species by Coagulation during Water Treatment at Power Plants", which deals with the effectiveness of flocculation in the water makeup process. In 1963 she successfully completed her Doctor of Science thesis, which was devoted to the distribution of species between water and steam and entitled "Water/Steam as a Solvent of the Low-volatile Inorganic Compounds". It was clearly this work that started her prominence on the world stage of power plant chemistry as discussed below. Her third academic achievement was accomplished in 1964 when she was awarded the status of Academic Professor at MEI.

Over a long period of time at MEI Professor Martynova worked together with her husband, Academician M.A. Styrikovich, who was Head of the Boiler Plant Department of MEI during this period. The famous "ray diagram" was the result of this beautiful cooperation. The "rays" for all the major boiler water salts, impurities, oxides and other compounds have provided the basis for most operating power plant chemistry guidelines around the world for over 40 years. The work, conducted in the early 1960s, was incredible when one considers that careful chemical analysis of the various species was required, and was performed without sophisticated analytical equipment such as ion chromatography available today. Martynova and Styrikovich also contributed much to the development of understanding of the solubility of species in water and steam (saturated and superheated), and on the influences of different factors on the corrosion processes in the water/steam circuits.

In the early 1970s, there is also no doubt that Professor Martynova made a great contribution to the understanding and use of oxygenated treatment for supercritical units, which she had heard about during one of her early technical visits to Germany where the treatment was first applied. She conducted much research at MEI to determine the optimal oxygen or hydrogen peroxide concentrations, and the water purity levels, which are required. Oxygenated treatment has become the world standard for once-through and supercritical units, and she was very proud of the contributions she made in this field. In the 1980s she made tremendous contributions together with the Steam Turbine Group at MEI into working out some of the species behavior at the phase transition zone of steam turbines.

Much power plant chemistry monitoring work was also performed under her supervision at plants all over the former Soviet Union. For this work she was awarded a State Prize.

During her life Professor Martynova conducted extensive academic and practical research in the field of power plant chemistry, both nuclear and fossil. She is co-author of 9 textbooks for students training in the Water and Fuel Technology specialties. Professor Martynova had a prestigious research group and was actively engaged in professional and academic training with 31 students presenting their Ph.D. theses under her supervision. Graduates of the Water and Fuel Technology Department now work in research and educational institutes as well as at power plants not only in Russia but in many other countries. Many of them stayed in academia and now hold leading positions. For instance, Professor. B.M. Larin, DSc is the head of Department of the Ivanovo Power Engineering University, and Professor V.V. Kishnevsky held the position of Pro-Rector of the Odessa Polytechnical Institute.

Professor Martynova's research addressed many areas and the results and proceedings are known worldwide, with the results being applied to the derivation of Operating Guidelines in every generating plant on earth. She was an author or co-author of about 300 publications in the field of water treatment and chemistry control. She was also a founder of a scientific-pedagogical School in the area of water treatment at fossil fueled and nuclear power plants.

Olga was awarded many prizes during her life. Among the most coveted were: the Polzunov Prize for her book “Processes of Steam Generation at Power Plants” (M.A. Styrikovich, O.I. Martynova and Z.L. Miropolski), and the Council of Ministers Prize for her work dedicated to the “Investigation of Octadecylamine (ODA) in Power Engineering”. She also received the status of Honoured Worker of Science and Engineering for her work on the “Investigation of Water and Steam Properties”.

In the former Soviet Union and in Russia, Professor Martynova was a member of two scientific councils at the State Science and Technology Committee and at the Power Engineering Ministry. Internationally she was an honored Professor at Dresden and Budapest Technical Universities; a member of the German Engineers Association (VDI); a member of the Editorial Board of Teploenergetika; a member of

the Scientific Editorial Advisory Board of VGB Kraftwerkstechnik magazine; and an associate editor of the Desalination magazine. She spoke English and German fluently, regularly translated abstracts of papers into Russian, and actively transferred technical information from the USSR to Europe and vice versa, even during the height of the cold war.

V.A. Kirillin and M.P. Vukalovich established the Soviet National Committee for the Properties of Steam in 1957. Professor Martynova joined the National Committee in 1975, and then became a very active member in the International Association for the Properties of Steam (IAPS). In this organization she was the co-founder of the Working Group on Power Plant Chemistry, which continues today in IAPWS. In 1991 she became an Honorary Fellow of IAPWS. Professor Martynova was also a member of CODATA.

Olga was a very accomplished pianist. In the mid-thirties she used to give performances as an accompanist. She indicated that it was her second love and was undecided in her early life whether to be a scientist or a musician. There was nothing more magnificent than going round to her apartment on Leninsky Prospect in Moscow for afternoon tea and suddenly finding her playing some Stravinsky.

During similar visits in 2002, she indicated it was her dream to live until the centenary of her husband. This centenary will be celebrated on November 18, 2002 in the Russian Academy of Sciences. Together with one of the Russian romance performers she had sorted out the poetry romances, which Styrikovich used to love. She had planned to create a music disc, but unfortunately did not have time to complete it. MEI hopes to organize a concert of Russian romance on the date of her birthday (in January 2003).

Professor Martynova died on September 24, 2002 and is buried in Moscow.

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The Major Publications (Books) by Professor Martynova

1. N.G. Patsukov and O.I. Martynova. Chemistry Monitoring at Power Plants. GEI, Moscow, USSR, 1955.
2. M.A. Styrikovich, O.I. Martynova, and Z.L. Miropolsky. Steam Generation at Power Plants. Energiya, Moscow, USSR, 1969.
3. V.V. Gerasimov, A.I. Kasperovich, and O.I. Martynova. Water Chemistry at Nuclear Power Plants. Atomizdat, Moscow, USSR, 1976.
4. O.I. Martynova, T.I. Petrova, V.L. Menshikova et al. Analytical Methods of Deetrmination of Basic Components of Corrosion Products in Working Fluids at Fossil and Nuclear Power Plants. MEI, Moscow, USSR, 1978.
5. O.I. Martynova, T.I. Petrova, V.L. Menshikova et al. Calculation of Water Chemistry of Power Generation Units. MEI, Moscow, Russia, 1978, 1998 (two editions).
6. O.I. Martynova, L.M. Zhivilova, B.S. Rogatskin, and N.P. Subbotina. Chemistry Monitoring at Fossil and Nuclear Power Plants. Energiya, Moscow, USSR, 1980.
7. T.Kh. Margulova and O.I. Martynova. Water Chemistry at Fossil and Nuclear Power Plants. Vysshaya Shkola, Moscow, USSR, 1981, 1987 (two editions).
8. O.I. Martynova and A.S. Kopylov. Water Chemistry, Chemistry Control and Monitoring at Nuclear Power Plants. Energoatomizdat, Moscow, USSR, 1983.
9. A.A. Gromoglasov, A.S. Kopylov, and A.P. Pylshchikov. Water Treatment: Processes and Apparatus. O.I. Martynova (Ed.). Energoatomizdat, Moscow, USSR, 1990.

Professor Martynova was the chapter author in the following books:

1. Water Chemistry at Power Plants. T. Kh. Margulova (Ed.). Energiya, Moscow, USSR, 1965.
2. Fossil and Nuclear Power Plants. Reference Book. Energoatomizdat, Moscow, USSR, 1989.
3. Thermal and Heat Engineering. Reference Book. Vol. 3. Energoatomizdat, Moscow, USSR, 1989.
4. Thermal and Heat Engineering. Reference Book. Vol. 4. Energoatomizdat, Moscow, USSR, 1991.