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Yakov Syrkin: On the 125th anniversary of his birthday

Sergey S. Plotkin, Andrey V. Dorokhov, Vitaly R. Flid[@]

MIREA – Russian Technological University (M.V. Lomonosov Institute of Fine Chemical Technologies), Moscow 119571, Russia
[@]Corresponding author, e-mail: vitaly-flid@yandex.ru

The article is dedicated to the 125th birthday of Yakov Kivovich Syrkin – Academician, Doctor of Chemical Sciences, Professor, Laureate of the Stalin Prize, and founder of the school of quantum chemistry in Russia. He was the head of the departments of Physical Chemistry at the M.V. Lomonosov Moscow Institute of Fine Chemical Technology and of Simple and Complex Compounds at the N.S. Kurnakov Institute of General and Inorganic Chemistry of the USSR Academy of Sciences, and the Laboratory of the Structure of Molecules at the L.Ya. Karpov Institute of Physical Chemistry. Yakov Syrkin was a world-famous scientist in the field of physical chemistry, who has addressed many issues of quantum chemistry, molecules structure, chemical bonds; the mechanism of chemical reactions, kinetics and catalysis. He was a brilliant teacher and lecturer, the initiator of many scientific ideas and directions, the author of more than five hundred scientific works, a responsive man of many talents. The chronological outline of his scientific, pedagogical and life path is presented, some less well-known facts about his biography has also been highlighted.

Keywords: *Yakov Kivovich Syrkin, physical chemistry, quantum chemistry, molecular structure, M.V. Lomonosov Moscow State Institute of Fine Chemical Technologies (MITHT), L.Ya. Karpov Institute of Physical Chemistry, N.S. Kurnakov Institute of General and Inorganic Chemistry, Ivanovo State University of Chemistry and Technology, Museum of the History of the Department of Physical Chemistry of MITHT.*

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Яков Кивович Сыркин: к 125-летию со дня рождения

С.С. Плоткин, А.В. Дорохов, В.Р. Флид[@]

МИРЭА – Российский технологический университет (Институт тонких химических технологий имени М.В. Ломоносова), Москва 119571, Россия
[@]Автор для переписки, e-mail: vitaly-flid@yandex.ru

Статья посвящена 125-летию со дня рождения Якова Кивовича Сыркина – академика АН СССР, доктора химических наук, профессора, лауреата Сталинской (ныне Государственной) премии, основателя школы квантовой химии в нашей стране, заве-

дующего кафедрой физической химии МИТХТ им. М.В. Ломоносова, заведующего Отделом строения простых и комплексных соединений ИОНХ им. Н.С Курнакова АН СССР, заведующего лабораторией строения молекул Физико-химического института им. Л.Я. Карпова, блестящего педагога и лектора, инициатора многих научных идей и направлений, автора более пятисот научных трудов, отзывчивого и разносторонне одаренного человека. Представлена хронологическая канва его научного, педагогического и жизненного пути, освещены некоторые менее известные факты его биографии.

Ключевые слова: *Яков Кивович Сыркин, физическая химия, строение молекул, МИТХТ им. М.В. Ломоносова, НИФХИ им. Л.Я. Карпова, ИОНХ им. Н.С. Курнакова, ИГХТУ, Музей истории кафедры физической химии МИТХТ.*

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December 5, 2019 marks the 125th birthday of Yakov Kivovich Syrkin – Academician, Doctor of Chemical Sciences, Professor, Laureate of the Stalin Prize (now the State Prize), founder of the school of quantum chemistry in Russia, the head of the departments of Physical Chemistry at the M.V. Lomonosov Moscow Institute of Fine Chemical Technology, and of Simple and Complex Compounds at the N.S. Kurnakov Institute of General and Inorganic Chemistry of the USSR Academy of Sciences, and the Laboratory of the Structure of Molecules at the L.Ya. Karpov Institute of Physical Chemistry. He was a brilliant teacher and lecturer; the initiator of many scientific ideas and directions, the author of more than five hundred scientific works, a responsive and gifted person.

Five years ago, in December 2014, at the M.V. Lomonosov Moscow State University of Fine Chemical Technologies, jubilee readings dedicated to the 120th birthday of Academician Ya.K. Syrkin were held. They were attended by teachers, staff, graduate students, and students from Moscow State Institute of Fine Chemical Technologies, as well as representatives of the scientific community from many scientific and educational organizations, in particular, Ivanovo State University of Chemistry and Technology, the L.Ya. Karpov Institute of Physical Chemistry, N.S. Kurnakov Institute of General and Inorganic Chemistry of the Russian Academy of Sciences, N.N. Semenov Institute of Physics and Technology of the Russian Academy of Sciences, and M.V. Lomonosov Moscow State University. Speakers with reports, mainly personal associates of Ya.K. Syrkin, his employees, colleagues and students, shared memories of their Teacher [1–3].

Yakov Syrkin's 120th anniversary was timed to coincide with the opening of the Museum of the History of the Department of Physical Chemistry at the Moscow State Institute of Fine Chemical Technologies, one of the oldest departments of this profile in Russia, founded in 1903 at the initiative of N.D. Zelinsky. The museum's constantly updated exposition presents documents, photographs, and artifacts that reflect its 116-year history.

The center of the museum is occupied by an exposition dedicated to Ya.K. Syrkin: a reconstruction of his office, stands with documents and material exhibits, autographs, photographs (including early ones from his personal archive), books from his scientific library systematized in a traditional catalog and electronic forms, reprints of journal articles spanning the period of his creative work from the beginning of the 1920s to the last year of his life. There are also stands with documents, photo portraits, and scientific biographies of all the heads of the department before and after Ya.K. Syrkin: S.G. Krapivin (headed the department from 1903 to 1924), Ya.I. Mikhailenko (1924–1931), M.G. Shirmazan (1974–1975), V.I. Goldansky (1975–1983), G.A. Grigoriev (1983–1988), A.A. Ovchinnikov (1988–1991), and A.P. Belov (1991–2004) [4–6].

Yakov Kivovich Syrkin was born in Minsk on November 24, 1894 (December 5, according to the new style). In 1904, he started going to the Minsk Commercial School and graduated from there in 1912. But the career of a businessman did not appeal to him, his interest in the natural sciences was stronger, and in the same year he enrolled in the Chemical Institute of Nancy University (France), where Viktor Grignard, who received the 1912 Nobel Prize in chemistry for research in the field of organometallic compounds, worked at that time.

The path to science for Ya.K. Syrkin was not easy, however. The First World War, which began in 1914, forced him to return to Russia. The chronology of his future path to higher education is described below.

In 1915–1918, Ya.K. Syrkin was a student at the Riga Polytechnic Institute (RPI), which, due to

Syrkin with his elder sister and her husband (Minsk, 1910).

Syrkin as a high school student (in the center) with his friends (Minsk, 1910).

Syrkin is in the gymnasium (Minsk, 1912).

Ya.K. Syrkin is at the Chemical Institute of the University of Nancy (Nancy, France 1913).

the threat of occupation of the Baltic States by the Germans, was evacuated first to Moscow, and then in 1918 to Ivanovo-Voznesensk (now Ivanovo), where he entered the newly organized Ivanovo-Voznesensk Polytechnic Institute (IVPI). Syrkin studied brilliantly and in 1919 he graduated with honors, successfully defending his diploma project; having received the title of process engineer and diploma No. 1 from IVPI's Faculty of Chemistry.

There is a multitude of evidence regarding Ya.K. Syrkin's contributions to science and his remarkable talent as a lecturer, teacher, and publicist [1–7]. There is just one illustration, drawing Ya.K. Syrkin as a lecturer. S.E. Shnol, professor at the Institute of Biophysics of the Russian Academy of Sciences, recalls: "At the Moscow State University's Faculty of Chemistry, lectures on the theory of the structure of chemical compounds were given by Ya.K. Syrkin. He was a wonderful lecturer; he reminded everyone of Rostand's cheerful and witty hero. He had clear logic and brilliant retreat to the side along with literary analogies and enthusiasm. And complex quantum mechanics became accessible and excitingly interesting" [8]. One of the authors of this article in the early 1960s, then a third-year student at the Moscow Institute of Fine Chemical Technology, listened to lectures by Ya.K. Syrkin about "The structure of matter" and completely agrees with its figurative comparison to Cyrano de Bergerac. Coincidentally, Rostand's play was being shown on the old stage of the Sovremennik Theater in Triumphal Square at this time.

Further on, we only give a chronological outline of his scientific, pedagogical and life path, focusing in more detail on less known facts.

After graduating from IVPI, Ya.K. Syrkin was left for pedagogical and scientific work in the Department of General Chemistry, where he held the positions of junior (1919–1921) and senior assistant (1921–1923) and then associate professor (1923–1925). In 1925, Ya.K. Syrkin was approved by the State Academic Council at the People's Commissariat of Education as a professor in the Department of Physical and Colloid Chemistry, where he worked until 1931. In 1931, Ya.K. Syrkin was invited to be the head of the Moscow Institute of Fine Chemical Technology's Department of Physical Chemistry, which formed that year, and he led it for 43 years (1931–1974). At the same time, he organized and headed the Laboratory of the Structure of Molecules at the Karpov Institute of Physical Chemistry, where he worked until his forced departure in 1952 in connection with the persecution of theoretical chemistry (Ya.K. Syrkin was an active supporter and developed the resonance theory of Nobel Prize winner Linus Pauling [9–12]).

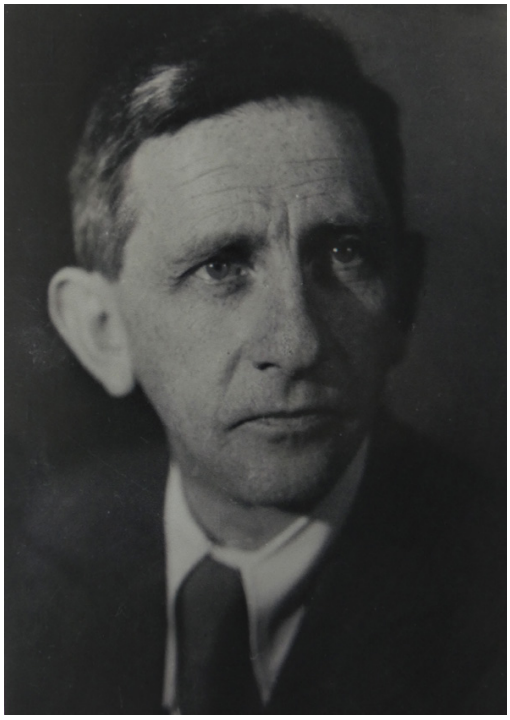
Ya.K. Syrkin (Nancy, France, 1913).

Ya.K. Syrkin as a student at the Riga Polytechnic Institute (August, 1916).

Ya.K. Syrkin (Ivanovo, 1925).

Ya.K. Syrkin at the Ivanovo-Voznesensk Polytechnic Institute (November, 1928).

Ya.K. Syrkin at the L.Ya. Karpov Institute of Physical Chemistry (1944).



Ya.K. Syrkin (Moscow, 1944).

After moving to Moscow, Yakov Kivovich over the years maintained contact with his native institute in Ivanovo.

In 1935, the All-Union Committee on Higher Technical Education conferred upon Ya.K. Syrkin the degree of Doctor of Chemistry for the totality of his scientific papers, without defending a dissertation.

During the Great Patriotic War, Ya.K. Syrkin remained in Moscow. He worked at the Karpov Institute of Physical Chemistry (the Moscow Institute of Fine Chemical Technology was evacuated to the city of Berezniki in the Perm oblast at that time) and, according to indirect information, took part in carrying out special tasks for the USSR government [12]. We

have summarized the facts available that can serve as confirmation of this:

1) In 1942–1943, only seven of his scientific articles were published in the open press;

2) At a general meeting of the USSR Academy of Sciences held in November 1942, a report by Academician A.F. Ioffe mentioned the scientific school of Syrkin [13]. It is noteworthy that this session took place during the most difficult period of the Great Patriotic War, at the height of the Battle of Stalingrad;

3) In 1943, Ya.K. Syrkin was awarded the State (earlier known as Stalin) Prize, was elected a corresponding member of the USSR Academy of Sciences, was awarded the Order of the Red Banner of Labor, and later, in 1945 – the Order of the Red Star. This military order was awarded not only for military merit, but also "... for the development of military science and technology ...; for merits in strengthening the defense of the state ..." [14].

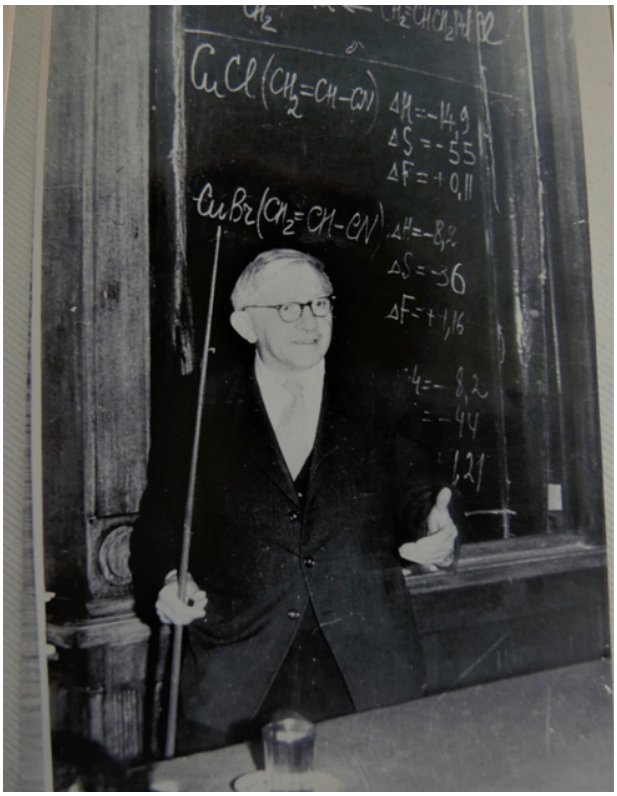
In the postwar years, Ya.K. Syrkin lectured at Moscow State University's Faculty of Chemistry on the theory of the structure of molecules until 1952, when he was removed from this activity for the same reason that he was forced to leave the Karpov Institute of Physical Chemistry [8–10].

Another place of scientific activity of Ya.K. Syrkin was the Kurnakov Institute of General and Inorganic Chemistry at the USSR Academy of Sciences (today the Institute of General and Inorganic Chemistry of the Russian Academy of Sciences), where he was invited by academician I.I. Chernyaev. At this institute, Yakov Kivovich held the positions of senior researcher (1957–1961), head of the Inorganic Compounds Construction Laboratory (1961–1967), and head of the Department of the Simple and Complex Compounds Structure (1967–1970). However, throughout his time in Moscow, including during the period of persecution, his pedagogical activities were mainly at the M.V. Lomonosov Moscow Institute of Fine Chemical Technology.

In 1964, Ya.K. Syrkin was elected a full member of the USSR Academy of Sciences in the department of "Chemical Physics". In the same year he was awarded the second Order of the Red Banner of Labor for the development of chemistry and in connection with his 70th birthday.

Another, less well-known page in Ya.K. Syrkin's life

Ya.K. Syrkin with colleagues at the Department of Physical Chemistry (Moscow, MITHT, 1968).



Ya.K. Syrkin at a lecture in MITHT (1962).

Ya.K. Syrkin on vacation
(Uzkoe sanatorium, August, 1963).

is his home, family, and hobbies. Everyone who visited the Syrkins in their Ivanovo and Moscow apartments noted the hospitality and cordiality of Yakov Kivovich, his wife Miriam Veniaminovna, and daughter Flora. The youngest of the children – their son Alexander was born in 1930 shortly before the family moved to Moscow.

Yakov Kivovich loved and knew music, theater, and literature. He always followed book releases, and during his time in Ivanovo he had already amassed a solid library of scientific and fiction novels. In Moscow, his collection grew by leaps and bounds.

Yakov Kivovich greatly appreciated Albert Einstein as a scientist and person. A portrait of Einstein always hung in his home and office.

Nature, contrary to popular belief, did not rest on its offspring. However, the gifted children did not follow in their father's footsteps. Flora Yakovlevna (1920–2000) was a candidate of art history, historian, and a theater expert. She was also the wife of the outstanding artist A.G. Tyshler. At the end of her life, she donated the family's collection of paintings to the Museum of Private Collections (a branch of the A.S. Pushkin Museum of Fine Arts), and Syrkin's children donated his scientific library (about 700 volumes) to the Moscow Institute of Fine Chemical Technologies' Department of Physical Chemisty. Alexander Yakovlevich is also in the humanities; he graduated from the Faculty of Philology at Moscow State University, a doctor of historical sciences, orientalist, and author of several books on oriental folklore. He worked at the Institute of Oriental Studies of the USSR Academy of Sciences and currently lives and works in Israel.

According to N.I. Godnev, student of Ya.K. Syrkin, later a professor at the

Ivanovo State University of Chemistry and Technology and a family friend, in a conversation with him, Yakov Kivovich in a delicate form expressed regret that the professional vocations of his children diverged from his interests.

Yakov Kivovich Syrkin died suddenly 45 years ago on January 8, 1974. He is buried in Moscow at the Preobrazhensky cemetery.

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About the authors:

Sergey S. Plotkin, Cand. of Sci. (Chemistry), Senior Researcher, Ya.K. Syrkin Department of Physical Chemistry, M.V. Lomonosov Institute of Fine Chemical Technologies, MIREA – Russian Technological University (86, Vernadskogo pr., Moscow 119571, Russia).

Andrey V. Dorokhov, Cand. of Sci. (Chemistry), Associate Professor, A.A. Reformatskiy Department of Inorganic Chemistry, M.V. Lomonosov Institute of Fine Chemical Technologies, MIREA – Russian Technological University (86, Vernadskogo pr., Moscow 119571, Russia). E-mail: dorohov@mirea.ru

Vitaly R. Flid, Dr. of Sci. (Chemistry), Head of the Ya.K. Syrkin Department of Physical Chemistry, M.V. Lomonosov Institute of Fine Chemical Technologies, MIREA – Russian Technological University (86, Vernadskogo pr., Moscow 119571, Russia). E-mail: vitaly-flid@yandex.ru

Об авторах:

Плоткин Сергей Семенович, кандидат химических наук, старший научный сотрудник кафедры физической химии им. Я.К Сыркина Института тонких химических технологий им. М.В. Ломоносова ФГБОУ ВО «МИРЭА – Российский технологический университет» (119571, Россия, Москва, пр-т Вернадского, д. 86).

Дорохов Андрей Викторович, кандидат химических наук, доцент кафедры неорганической химии им. А.А. Реформатского Института тонких химических технологий им. М.В. Ломоносова ФГБОУ ВО «МИРЭА – Российский технологический университет» (119571, Россия, Москва, пр-т Вернадского, д. 86). E-mail: dorohov@mirea.ru

Флид Виталий Рафаилович, доктор химических наук, профессор, заведующий кафедрой физической химии им. Я.К Сыркина Института тонких химических технологий им. М.В. Ломоносова ФГБОУ ВО «МИРЭА – Российский технологический университет» (119571, Россия, Москва, пр-т Вернадского, д. 86). E-mail: vitaly-flid@yandex.ru

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