

THE TASK OF THE CENTURY



PROFESSOR LEV V. EPPELBAUM

Bu dəfəki həmsöhbətimiz, həmyerlimiz, dünyaşöhrətli geofizik alim, Təl-Əviv Universitetinin professoru Lev Eppelbaumdur.

O, 1982-ci ildə təhsilini Azərbaycan Dövlət Neft və Kimya İnstitutunda müvəffəqiyyətlə başa vurmuş və əmək fəaliyyətinə keçmiş SSRİ Geologiya Nazirliyinin Mərkəzi Elmi Tədqiqat Geoloji Kəşfiyyat İnstitutunun (METGKI) Azərbaycan filialında mühəndis - geofizik kimi başlamışdır.

1989-cu ildə “Dağ şəraitində mis-kolçedan filizi yataqlarının axtarışı və kəşfiyyatı üçün təbii geofiziki sahələrin interpretasiya metodlarının metodologiyasının işlənməsi” mövzusunda dissertasiya müdafiə edərək geologiya-mineralogiya elmləri namizədi elmi adını almışdır.

1990-cı ilin dekabrında Lev Eppelbaum ailəsi ilə birlikdə İsrailə köçür, 1991-ci ilin iyununda Təl-Əviv Universitetinin Geofizika kafedrasında işləməyə başlayır. Lev Eppelbaum 1991-1993-cü illərdə Təl-Əviv Universitetinin geofizika kafedrasında “Ölü dənizin Transform hüdudlarında qravitasiya, maqnit və istilik sahələrinin analizi, interpretasiyası və modelləşdirilməsi” mövzusunda doktorluq işi üzərində çalışır.

2005-ci ildə professor vəzifəsinə keçir. Alim Təl-Əviv Universitetində potensial geofiziki sahələr, təbii geofizika və arxeoloji geofizika fənlərini tədris edir.

Məşhur geofizik L.Eppelbaum Azərbaycana çox bağlıdır. Uzun illər boyu Azərbaycandan uzaqda yaşamaqla elmi fəaliyyətlə məşğul olmasına baxmayaraq, doğma yurda sevgi hissi onda daim yaşamaqdadır.

Çoxdan İsraildə yaşasa da, 1988-ci ildən Azərbaycan Milli Elmlər Akademiyasının (AMEA) Geologiya

və Geofizika İnstitutu ilə yaranan əlaqə zaman keçdikcə daha da güclənmişdir.

Bu əməkdaşlığın nəticələrindən biri onun AMEA-nın əsas əməkdaşları akademik A.Əlizadə, İ.Quliyev və F.Qədirovla birlikdə hazırladığı “Geosciences of Azerbaijan” adlı möhtəşəm ikicildliyin 2016-2017-ci illərdə Berlin-Nyu-York-Londonda “Springer” nəşriyyatında ingilis dilində nəşr olunmasıdır.

Lev Eppelbaum dünyaşöhrətli Azərbaycan geofizika məktəbinin şagirdi olduğundan qürur duyur, öz nitqlərində və elmi məqalələrdə ölkənin zəngin geoloji - geofiziki özəlliklərindən tez-tez nümunələr verir.

2018-ci ildə arxeoloji geofizika və ətraf mühitin geofizikası sahəsindəki nailiyyətlərinə görə “Ecoworld” beynəlxalq müsabiqəsinin təşkilat Komitəsi, Rusiya Təbiət Elmləri Akademiyası, Rusiya Federasiyasının Dövlət Duması Lev Eppelbaumu V. Vernadski adına qızıl medalla təltif etmişdir.

2019-cu ildə potensial geofiziki sahələrin (maqnit, istilik və qravitasiya sahələri) qeyri-ənənəvi təhlili sahəsində uğurlarına və bu işlərin böyük dünya əhəmiyyəti daşmasına görə L.Eppelbaum Avropa Yer Elmləri Cəmiyyətinin Xristian Huygens medalı ilə təltif edilmişdir.

“Biz indi XXI əsrin birinci rübünün sonundayıq. Elmmetriya mütəxəssislərinin fikrincə, bəşəriyyətin əldə etdiyi elmi biliklərin miqdarı dörd ildən bir iki dəfə artır. Bununla yanaşı belə bir təəssürat yaranır ki, ətraf mühitin keyfiyyəti yalnız pisləşir. Bəs problem nədədir? Vəziyyəti yaxşılaşdırmaq üçün nə etmək olar?” (Lev Eppelbaum). Ətraf mühitin, ekoloji parametrlərin pisləşməsinin səbəbləri, onlarla müba-

rizə yolları və bir sıra digər məsələlər barədə jurnalımızın əməkdaşının tanınmış İsrail alimi, Tel-Əviv Universitetinin professoru, Azərbaycan Dövlət Neft və Sənaye Universitetinin (ADNSU) fəxri professoru, "Azİz"(Azərbaycan-İzrail) Beynəlxalq Assosiasiyasının fəal üzvü, Azərbaycan-İsrail Ticarət və Sənaye Palatasının üzvü Lev Eppelbaumla müsahibəsini dərc edirik.

“Yer və İnsan”

The Task of the Century

-We talked a lot about environmental protection. Nonetheless, what are we doing about it?

-We are now at the end of the first quarter of the 21st century. According to scientometricians, the amount of knowledge gained by humanity doubles every four years. However, it seems that the quality of the environment is only getting worse. So, what's the matter? And what can be done to improve the situation?

Our magazine's correspondent talks about the environment, the reasons for the deterioration of environmental parameters, ways to combat them, and some other things with a well-known Israeli scientist - professor at Tel Aviv University, honorary professor at the Azerbaijan State University of Oil and Industry (ASUOI), active member of the International Association "AzIz", member of the Azerbaijan-Israel Chamber of Commerce and Industry, Lev Eppelbaum.

- Don't you think that despite the enormous amount of research in the field of ecology and significant financial expenditures, the situation is only getting worse?

- The assessment of this problem must be approached from many angles. Indeed, ecological research is receiving high priority over other areas of knowledge, for example, geological and geophysical. The number of valuable studies is growing. But at the same time, the population of the Earth's inhabitants is growing, and their well-being is increasing. This leads to many alarming ecological peaks. I will give three typical examples.

(1) The amount of waste on Earth (both on land and

in water) is rapidly increasing. Even if all countries simultaneously began cleaning operations (which is very unlikely), it would take many decades.

(2) Let's take Southeast Asia, for example. The region's population is more than 20% of the world's population. Just 30 years ago, most people in this part of the planet used bicycles. Now, almost 40% of the population, due to the enormous economic growth in this region, use personal cars. Even though cars are becoming more environmentally friendly, the air is not getting cleaner (quite the opposite).

(3) Life expectancy is growing all over the world, and people are buying more medicines for various purposes. As studies have shown, about 30% of drugs are thrown away, which, as a result, undoubtedly poisons the environment.

There are many such examples. I will not touch on the Caspian problem now; I have already spoken about it several times. Besides everything else, many new materials and medicines with often unpredictable chemical and physical properties are being developed now. And something needs to be done about this, too.

- I have been cooperating with you for quite a long time. I know that you are a geophysicist by profession, specializing in geodynamics, tectonics, the study of deep structure, and archaeological and environmental geophysics. However, your latest article (jointly with V.I. Dimitrov) was published in a specialized chemical journal.

- I would like to ask you not to forget that I am a graduate of the Institute of Oil and Chemistry (Azineftekhim) - this is what ASOIU used to be called. By the way, graduates of Azineftekhim (or, as they used to say, AZI) certainly occupy first place in Azerbaijan in the number of specialists who have held (and hold) prestigious positions in science, business, and administration (not only in the Republic of Azerbaijan).

Prof. Vasili Dimitrov, my long-time colleague – we worked together at the Department of Geophysics and Planetary Sciences of Tel Aviv University from 1992 to 2014. After his retirement, Prof. Dimitrov lives in Canada. Although we constantly maintain Internet and telephone communication. In my long-standing belief, discoveries can now be made mainly by specialists integrated from various fields of knowledge. In this case, they have fresh views on solutions to many problems..

What is the title of your article, and where was it published?

- The article has a fundamental title, "Structure and Properties of Matter—Additive Approach". It was just published in the Journal of Physical Chemistry B (Springer).

- When did the idea of writing this article arise?

- Quite a long time ago, more than fifteen years ago. But then this idea seemed naive and primitive to me. Of course, a considerable number of famous scientists worked in chemistry. And what, no one had thought of this approach before?

- Why did you return to this idea?

- Prof. V. Dimitrov convinced me of the significance of this research for many areas of science, and I sifted through a lot of publications and even consulted with several specialists. Everything indicated that this idea had not been encountered before. After submitting the article to the editorial board, it received the approval of three independent experts.

- Professor, can you explain what the additive approach is?

As for the additive approach in general. The principal father of this idea, which allows us to bypass quantum tricks and jump from the atom to the macroscopic properties of matter, is the great Steve Benson. Many of his monographs are known, including the famous "Thermochemical Kinetics" - a textbook on which more than one generation of kineticists grew up. The additive approach is efficient. At the same time, it should be noted that there is nothing original in it, in the sense that it does not contain a single formula of ours; all this is classic - the equations of Lorentz, Gibbs, Sugden, Landau, etc. Perhaps the Gibbs equation is read a little differently, not the way it is usually read. But we have the right to do so. In essence, it is just a puzzle assembled, the main feature of which is the sequence. The correct sequence of operations is given here. Equation (4) cannot be solved earlier than equation (3), or equation (15) earlier than equation (12).

We assume that the proposed idea will be intensively developed further: it is like a small stream that can eventually become a turbulent, wide river.

- And has the idea of taking a patent on this idea not occurred to you?

- Yes, it has. Since we are talking about the sequence of application of the corresponding operations (algorithms), Prof. V. Dimitrov and I have discussed this idea many times. But we concluded that it would be better for the international scientific community, and ultimately for the inhabitants of the Earth, if we published this article immediately.

- Dear Professor, so who will benefit from your article?

Our article is helpful to everyone – ecologists, chemists, physicists, geophysicists, geologists, and in general to everyone involved in natural sciences. But it is beneficial to pharmacists, those who synthesize new substances. These substances may be dangerous (toxic, explosive, actively tactile, highly volatile, chromophoric, etc.). The very presence of amino groups (NH₃) or oxy groups (NO₂, P₃O₄) already indicates such a danger. Of course, it is good to at least know something in advance. What shocked us was the high accuracy of the assessment. For a situation where we know practically nothing, even an error of several tens of percent is good.

- Can you give a clear example from the pharmaceutical industry?

- Please, but without names. Several years ago, a global coronavirus epidemic swept across the Earth. About two dozen vaccines were developed in great haste. But, as it turned out later, several of them harmed the human body. Using our approach, some mistakes could have been avoided.

- Dear Prof. Eppelbaum, thank you for your interview!

REFERENCE

Dimitrov, V.I. and Eppelbaum, L.V., 2025. Structure and properties of matter – additive approximation. Journal of Physical Chemistry B (Springer), 19, No. 2, 294-299. doi: 10.1134/S1990793125700046