

## **RECOGNITION OF THE ACHIEVEMENTS OF THE S. P. TIMOSHENKO INSTITUTE OF MECHANICS BY THE WORLD'S SCIENTIFIC COMMUNITY**

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**The article is devoted to the forthcoming (in 2018) 100th anniversary of the National Academy of Sciences of Ukraine (NASU) and the S. P. Timoshenko Institute of Mechanics of NASU. Information on the recognition of scientific achievements of the S. P. Timoshenko Institute of Mechanics by the world's scientific community is presented. The preparation of a three-volume collection *Modern Problems in Mechanics* devoted to the anniversary is announced. It will include reviews of scientific results obtained at the S. P. Timoshenko Institute of Mechanics and published in *Prikladnaya Mekhanika* in Russian and in *International Applied Mechanics* in English since 2011**

**Keywords:** National Academy of Sciences of Ukraine, S. P. Timoshenko Institute of Mechanics, 100th anniversary, recognition of scientific achievements, world's scientific community, three-volume collection *Modern Problems of Mechanics*

**1. Introduction.** In 2018, the National Academy of Science of Ukraine (NASU) and the S. P. Timoshenko Institute of Mechanics of NASU will celebrate the 100th anniversary of their foundation.

The National Academy of Sciences of Ukraine was established on November 27, 1918 (known as the Ukrainian Academy of Science from 1918 to 1921, as the All-Ukrainian Academy of Science from 1921 until 1936, as the Academy of Science of the Ukrainian SSR from 1936 to 1991, as the Academy of Science of Ukraine from 1991 to 1993, and the National Academy of Science of Ukraine since 1994).

The S. P. Timoshenko Institute of Mechanics was established on November 30, 1918 and was the first technical institute in the NASU (known as the Institute of Technical Mechanics from 1918 to 1929, as the Institute of Structural Mechanics from 1929 to 1959, as the Institute of Mechanics from 1959 to 1993, and as the S. P. Timoshenko Institute of Mechanics since 1993).

On the occasion of the forthcoming anniversary, the present paper briefly discusses how the world's scientific community has recognized the scientific achievements of the S. P. Timoshenko Institute of Mechanics throughout the entire period since its establishment. A single article, especially such a short one, is certainly insufficient to cover all scientific achievements of the institute that have been recognized. In this connection, our, more specific goal here is to review the achievements of the institute that have been recognized by the world's scientific community. It should be noted, however, that such achievements cannot always be unanimously recognized by all members of the world's scientific community because it does not seem to have yet, at least in the author's opinion, universally accepted criteria for the recognition of scientific results obtained by separate research centers yet.

For convenience, the research conducted by the S. P. Timoshenko Institute of Mechanics is divided into two periods: (i) from 1918 to 1958 and (ii) since 1959. Though this division is obviously conventional, it represents different approaches used

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during these periods to ascertain how the world's scientific community recognized the scientific achievements of the institute. The first period (1918–1958) is mainly associated with the activity of two classics of science in the 20th century: Stephen Prokof'evich Timoshenko (December 23, 1878 – May 29, 1972) and Nikolay Nikolaevich Bogolyubov (August 21, 1909 – February 13, 1992). The work of these great scientists becomes more significant with time (see Sec. 2 for more details). During the second period (since 1959), the achievements of the next generations of the institute's scientists have been recognized by the world's scientific community (for a brief discussion, see Sec. 4 where use is made of a quite rigorous criterion formulated in Sec. 3 to ascertain how the world's scientific community has recognized these achievements). For more details on the activity of the S. P. Timoshenko Institute of Mechanics, see the book [7] published in 2008 on the occasion of the 90th anniversary of the institute.

The concluding section (Sec. 5) of the present article announces the preparation of the three-volume collection *Modern Problems in Mechanics* that will be issued on the occasion of the 100th anniversary of the National Academy of Sciences of Ukraine and the S. P. Timoshenko Institute of Mechanics. The collection will include reviews on various subjects written by leading scientists of the institute and published in *Prikladnaya Mekhanika* in Russian and in *International Applied Mechanics* in English, since 2011. Currently, the journal *Prikladnaya Mekhanika* is translated into English and published by Springer as *International Applied Mechanics*.

**2. First Period (1918–1958).** Here we will discuss how the world's scientific community recognized the achievements of the S. P. Timoshenko Institute of Mechanics during the first period. Since, as already mentioned above, this period is mainly associated with the work of the two classics of science in the 20th century S. P. Timoshenko and N. N. Bogolyubov, we will provide below brief biographies of these prominent scientists.

**2.1.** S. P. Timoshenko (December 23, 1878 – May 29, 1972) is the founder and first director (1918–1920) of the Institute of Mechanics (then the Institute of Technical Mechanics of the Ukrainian Academy of Sciences). He was born in the village of Shpotovka, located in the Konotop district of the Chernigov Province (now Sumy oblast, Ukraine). He is a member of many academies in various countries and honoris causa of many universities and higher technical education institutions.

In 1920, Timoshenko immigrated to Yugoslavia and later to the USA. From 1920 to 1922, he worked at the Polytechnic Institute of Zagreb (Yugoslavia). Since 1922, Timoshenko spent much of his ensuing scientific and teaching career in the USA. After the completion of his career in 1960, he lived in Germany. In the USA, Timoshenko worked for the Westinghouse Company, and was a professor at the Michigan (1927–1936) and Stanford (1936–1960) Universities. It should be noted that in the USA, Timoshenko is generally recognized as the founder of engineering mechanics.

Currently, Timoshenko is an acknowledged authority in the world's community of mechanicians and mechanical engineers (both English- and Russian-speaking) for his great contribution to the establishment and development of various fields in mechanics. His contribution to the theory of elasticity, resistance of materials, statics of structures, theories of plates and shells, stability of elastic systems, theory of vibrations, and other fields of engineering mechanics is well known. His research on the history of strength of materials as a science and on engineering education is widely known as well. Timoshenko's results on models in the theories of rods, plates, and shells are world-famous. For example, all experts must be aware of the so-called Timoshenko-type model, which allows incorporating shear strains into the theory of thin-walled systems.

A unique and generally recognized achievement by Timoshenko is his monographs on the basic fields in engineering mechanics, which were published in English in the USA [81–93] and later translated into Russian [27–36]. These monographs are still relevant and have been used by many generations of English-and Russian-speaking experts in engineering mechanics. Living far from the motherland, Timoshenko exercised a significant influence on the training of domestic experts through his monographs.

Stephen Prokof'evich was always respectful to his motherland and to the qualification of domestic engineers. In the preface to his last Russian-language monograph [35], which was published during his lifetime, Timoshenko wrote that it is dedicated to his motherland and Russian engineering genius. This worthily characterizes the life, activity, and achievements of Stephen Prokof'evich.

More details on the life, activity, and achievements of S. P. Timoshenko, a great scientist and classic of science in the 20th century, can be found in the short article [5] and memoirs [36] published in Russian in 1993.

**2.2.** N. N. Bogolyubov (August 21, 1909–February 13, 1992) is the founder (together with N. M. Krylov) of the world-famous and generally recognized school of nonlinear mechanics. From 1925 to 1950, he was a research officer at the Department of Mathematical Physics at the Institute of Structural Mechanics of the Academy of Sciences of the Ukrainian SSR (now the S. P. Timoshenko Institute of Mechanics). Bogolyubov was born in Nizhny Novgorod. He was a member of many

foreign academies, honoris causa of many foreign universities, and the winner of many scientific awards and medals. He became a corresponding member and academician of the NASU in 1939 and 1948, respectively, and academician of the Academy of Science of the USSR in 1953.

Bogolyubov has shown surprising mathematical abilities since his childhood. In the age of 13, he started to attend research seminars of the academician N. M. Krylov, his outstanding teacher, and completed his first research when he was 15. In 1932, Bogolyubov and Krylov began to develop the theory of nonlinear vibrations, a new mathematical field that they called nonlinear mechanics.

It should be noted that Bogolyubov's ideas and methods underlain the creation of nonlinear mechanics as a new research area (see the anniversary paper [19] for more details). In [19], it is said that "Bogolyubov's ideas and fundamental results in the area of nonlinear mechanics underlie many modern research methods in general mechanics, continuum mechanics, celestial mechanics, solid mechanics and gyroscopic systems, theory of stability of motion, theory of control, adjustment, and stability, space flight mechanics, vibrations of mechanical systems, mathematical ecology, and other fields of science and technology."

The results on nonlinear mechanics Bogolyubov obtained during the Kiev period of his activity were included in the widely known monographs [2, 9–18, 67–71], which have become classical. The life and activity of Bogolyubov were divided in [26] into the following periods: Kiev (1925–1950, including his study in Ufa in 1941 to 1943), Sarov (1950–1953), Moscow/Dubna (1953–1992). Note that the monograph [18] was published in 2005, but its title indicates the years (1932–1940) when the results were obtained and published, which also refer them to the Kiev period. When nonlinear mechanics was developed, not only its mathematical aspects, but also its application to some engineering problems were considered, which is also reflected in the titles of the monographs [10–12]. During the Kiev period, Bogolyubov worked as a professor at the Kiev University.

Currently, nonlinear mechanics is actively developed in a number of research centers worldwide. The Kiev school of nonlinear mechanics founded by Bogolyubov is widely known in and deservedly recognized by the scientific community.

During the Moscow period, Bogolyubov was a professor at the Moscow University, the Academician-Secretary of the Mathematics Division in the Academy of Science of the USSR, and the head of the Joint Institute for Nuclear Research, a large international research center in Dubna. He established the schools of theoretical physics in Moscow and Dubna. During this period, Bogolyubov actively cooperated with Ukrainian scientists. For example, he was the founder and first director of the Institute of Theoretical Physics of the Academy of Sciences of Ukraine.

Bogolyubov was a unique scientist—he was simultaneously a mechanician, a mathematician, and a physicist. Being so versatile was traditional among classics of science in the previous centuries. More details on the life and activity of this well-known scholar can be found in the reviews [19, 26].

The wide scientific interests of Bogolyubov and the fundamental scientific results that he obtained are described in the 12-volume *Collection of Works* [1] published by the Russian Academy of Sciences in the series *Classics of Science*.

**2.3. Remarks.** Certainly, a number of well-known results were also obtained by scientists of the S. P. Timoshenko Institute of Mechanics during the first 40 years (1918–1958). However, these results, which were recognized by the world's scientific community, were greatly influenced by Timoshenko and Bogolyubov. This is the institute's history now, but the value of prominent scientists' work increases with time.

Thus, to analyze how the world's scientific community recognized the achievements of the S. P. Timoshenko Institute of Mechanics after 1959, we need a balanced approach because the bar had been raised high in the previous period (1918–1958). Such a balanced approach is also needed because new generations of scientists, including the present generation, have worked at the institute since 1959.

In Sec. 4, we will analyze how the world's scientific community has recognized the achievements of the S. P. Timoshenko Institute of Mechanics since 1959. To this end, we will use a rigorous and balanced criterion formulated in Sec. 3.

**3. A Criterion for the Recognition of the Scientific Achievements of the Institute by the World's Scientific Community.** A recognition criterion was proposed in [48] and then mentioned in [6]. We will discuss this criterion following mainly [48].

The recognition of the scientific achievements of individual teams or scientists by the world's scientific community is a very complex and many-sided process that combines the objective motives and traditional aspirations of separate schools of thought and individual scientists. So intricate a situation is partially due to the unavailability of consistent criteria for such recognition. Since science as a social phenomenon is many-sided, it is quite possible that such a criterion cannot be formulated.

However, the criterion proposed in [48] is, apparently, relatively objective and sufficiently balanced to be used to evaluate the scientific results obtained at the S. P. Timoshenko Institute of Mechanics since 1959.

The criterion includes two aspects: scientific results are considered recognized by the world's scientific community if they are included in (i) review articles prepared and published at the invitation of leading English-language journals or/and (ii) English-language encyclopedias.

Here are some comments on this criterion.

1. This criterion addresses a wide range of scientific results obtained by research teams or individual scientists. Outstanding achievements are commonly recognized by well-known international awards.

2. The criterion applies to scientific results reported in series of publications. The bibliometric indicators (based on citation) can hardly be used in this criterion because the number of citations is associated with an individual publication.

3. Certainly, individual publications reporting on outstanding achievements are recognized by the world's scientific community. Such achievements are commonly recognized by well-known international awards and the corresponding publications have high citation indicators.

4. The criterion seems to have to disregard participation in international research projects because they are just a way to obtain scientific results but not an assessment of their quality.

5. The criterion seems to have to disregard the number of published English-language monographs because today's publishing programs are mainly profit-oriented and not always indicative of the relevance of the scientific results to be published.

6. The criterion seems to have to disregard participation in international scientific conferences because nowadays conference reports are mainly indicative of the fee paid (quite high in some cases) rather than the relevance of the results reported.

7. The criterion formulated above is by no means comprehensive and universal. It may be supplemented and adapted to individual research areas. Nevertheless, this criterion could provide adequate information for deciding whether certain scientific results (just obtained or long available) are recognized by the world's scientific community.

This criterion appears rigorous and strictly defined because it is based on the above two aspects, which are undoubtedly important for the recognition of scientific achievements by the world's scientific community.

**4. Second Period (since 1959).** Here we will discuss the application of the criterion formulated in Sec. 3 to the analysis of how the world's scientific community have recognized the scientific achievements of the S. P. Timoshenko Institute of Mechanics since 1959. The discussion of scientific results in specific research areas is based on English-language publications in the list of references, which is quite extensive.

The list of references includes only multivolume, including two-volume books on mechanics that have been published since 1959 (see [7, 48] for the complete list of all monographs published in this period). Note that scientists of the institute published not only monographs, but also textbooks such as *Theoretical Mechanics* [8], one of the best textbooks published in Russian and awarded the State Prize of Ukraine.

The fields of research in which the achievements of the institute were recognized by the world's scientific community according to the criterion formulated in Sec. 3 are divided into three groups. The first group (Sec. 4.1) includes research areas for which both aspects of the recognition criterion (publication of results in (i) review articles in leading English-language journals and (ii) English-language encyclopedias) are used. The second group (Sec. 4.2) includes research areas for which only the first aspect of the recognition criterion (publication of results in English-language encyclopedias) is used. The third group (Sec. 4.3) includes research areas for which only the second aspect of the recognition criterion (publication of results in review articles in leading English-language journals) is used.

Let us discuss each of the three groups separately.

**4.1. First Group of Research Areas.** The first group includes the following research areas for the S. P. Timoshenko Institute of Mechanics.

**4.1.1. Mechanics of Composites, Including Nanocomposites.** The first aspect of the recognition criterion is met because there are the special issue [77] of the journal *Applied Mechanics Reviews* (USA), consisting of five papers, and the reviews [38, 55].

The second aspect is satisfied by including the paper [57] in the seven-volume encyclopedic handbook [58].

The basic achievements in this research area are collected in the three-volume book [21], 12-volume book [25], both in Russian, two monographs in English, and a number of monographs in Russian. Note that the book [25] has nothing comparable

in the world's scientific literature on mechanics because it outlines results on the mechanics of composites and the mechanics of structural members made of composites.

*4.1.2. Nonclassical Problems in Fracture Mechanics.* The first aspect is met by the reviews [45, 56], first of which was published in *Annals of the European Academy of Sciences*.

The second aspect is met by including the papers [44, 59] in the modern encyclopedia on fracture mechanics [41].

The basic achievements in this research area are included in the four-volume five-book series [24], in the two-volume monograph [4], in Vol. 5 of the 12-volume book [25], and in other books in Russian. Note that the book [24] has nothing comparable in the world's scientific literature and is a unique multivolume book on nonclassical problems in fracture mechanics.

*4.1.3. Qualitative and Analytic Methods for the Analysis of the Dynamics and Stability of Complex Nonlinear and Controlled Systems.* The first aspect is met by publishing the reviews [74, 75] in English-language journals.

The second aspect is met by including Vols. 214 and 246 in the unique encyclopedic series [78].

The basic achievements in this research area are represented in numerous monographs in English and in a number of monographs in Russian. Noteworthy is the unique series [78] that now consists of 247 volumes published over the period from 1970 to 2002.

*4.1.4. Mechanics of Coupled Fields in Materials and Structural Members.* The first aspect is met by publishing the review [60] in an English-language journal.

The second aspect is met by including the papers [61, 62] in the modern 11-volume encyclopedia on thermal stresses [40].

The basic achievements in this research area are represented in the five-volume book [23] and in numerous monographs in Russian. Note that the five-volume book [23] has nothing comparable in the world's scientific literature and is a unique multivolume book on the mechanics of coupled fields in materials and structural members.

Thus, the scientific achievements in the four research areas have been recognized by the world's scientific community according to the criterion formulated in Sec. 3.

**4.2. Third Group of Research Areas.** The third group includes the following two research areas for the S. P. Timoshenko Institute of Mechanics.

*4.2.1. Numerical Methods in the Mechanics of Inhomogeneous Anisotropic Shells and Plates with Variable Parameters.* No information on the first aspect is available.

The second aspect is met by including the paper [43] in the modern 11-volume encyclopedia on thermal stresses [40].

The basic achievements in this research area are represented in Vol. 4 of the five-volume series [20], Vol. 2 of the three-volume series [21], Vols. 8 and 11 of the 12-volume series [25], in two monographs in English and in numerous monographs in Russian. Note that this research area has been actively developed over the second period (since 1959).

*4.2.2. Thermoplasticity.* No information on the first aspect is available.

The second aspect is met by including the paper [80] in the modern 11-volume encyclopedia on thermal stresses [40].

The basic achievements in this research area are represented in Vol. 3 of the five-volume series [20], Vol. 6 of the six-volume series [22], Vol. 2 of the five-volume series [23], Vol. 11 of the 12-volume series [25], and in numerous monographs in Russian. Note that this research area has been actively developed over the second period (since 1959).

Thus, the scientific achievements in the two research areas have been recognized by the world's scientific community according to the criterion formulated in Sec. 3.

**4.3. Second Group of Research Areas.** The second group includes the following three research areas for the S. P. Timoshenko Institute of Mechanics.

*4.3.1. Dynamic Problems for Elastic Bodies with Initial (Residual) Stresses.* The first aspect is met by publishing the review [51] in *Applied Mechanics Reviews*.

No information on the second aspect is available.

The basic achievements in this research area are represented in a number of monographs in Russian.

*4.3.2. Theory of Waves in Mixtures.* The first aspect is met by publishing the review [79] in *Applied Mechanics Reviews*.

No information on the second aspect is available.

The basic achievements in this research area are represented in Vol. 2 of the 12-volume book [2] and in a number of monographs in Russian.

*4.3.3. Ultrasonic Nondestructive Methods for Stress Analysis of Structural Members and Near-Surface Layers of Materials.* The first aspect is met by publishing the review [46] in an English-language journal.

No information on the second aspect is available.

The basic scientific results in this research area were obtained in cooperation with the E. O. Paton Institute of Electric Welding and are reported in Vol. 2 of the book [3], Vol. 3 of the five-volume series [23], and a number of monographs in Russian. A feature of these results is that they are related to triaxial stresses (including biaxial and uniaxial stresses as special cases), whereas the results that were obtained in other research centers are related to uniaxial stresses only.

Thus, the scientific achievements in the three research areas have been recognized by the world's scientific community according to the criterion formulated in Sec. 3.

Thus, we have rigorously proved in Sec. 4 that the achievements of the institute in the above nine research areas since 1959 have been recognized by the world's scientific community.

**5. For the 100th Anniversary of the National Academy of Science of Ukraine (NASU) and the S. P. Timoshenko Institute of Mechanics of the NASU. On Publication of Monographs.** In connection with the forthcoming 100th anniversary (November, 2018), we will discuss the monographs published by scientists of the institute and announce the preparation of the three-volume collective monograph *Modern Problems in Mechanics*.

Throughout the history of mankind and science, scientific studies have been intended to discover new phenomena, describe new laws, develop new methods, etc. After obtaining results, it was natural to want to present the new knowledge to the world's scientific community. Thus, scientific results became to be published, first as separate articles. Results on a certain scientific problem and in a certain research area are published as a series of articles. After publishing a series of papers, it is natural to want to analyze and generalize the results reported in these papers, which is done in monographs. Thus, monographs provide detailed information on scientific results after analysis and generalization for the world's scientific community.

In this connection, monographs may be considered the top level of presenting qualitative and balanced information on scientific achievements in separate research areas to the world's scientific community.

Monographs may be divided into the following three groups according to their goals: educational monographs, review monographs, scientific monographs.

Educational monographs include not only new scientific results, but also well-known results needed for educational purposes, which makes such monographs highly popular. A classical example of such monographs is Timoshenko's world-famous monographs because they include courses of lectures read by Timoshenko at American universities.

Review monographs tend to include almost all results obtained worldwide in a certain research area and are considered to be quite objective reviews. An example is Vol'mir's well-known monographs. Such monographs are also quite popular as containing extensive information.

Scientific monographs mainly include scientific results obtained by the authors and their followers in a certain research area. A classical example is Bogolyubov's world-famous monographs. The high popularity of such monographs is due to the clear-cut exposition of new results.

Let us now briefly discuss published and announced monographs of the S. P. Timoshenko Institute of Mechanics.

**5.1. Briefly about Published Monographs.** We will discuss monographs published in the first (1918–1958) and second (since 1959) periods and monographs available in the Library of Congress, USA.

**5.1.1. Monographs Published in 1918–1958.** As indicated in Sec. 2, the monographs published by the institute in the first period and recognized by the world's scientific community were mainly due to S. P. Timoshenko and N. N. Bogolyubov who are classics of science in the 20th century. In this connection, the main monographs of the institute in the first period are [27–36, 81–93] by Timoshenko and [2, 9–18, 67–71] by Bogolyubov. It should be noted that, as already mentioned in Sec. 2.2, the monograph [18] was published by Nauka in Moscow in 2005, but its title indicates the years (1932–1940) when the results were obtained and published, which refer them to the Kiev period of activity of Bogolyubov.

Certainly, in this first period, other scientists of the institute published numerous monographs, which were awarded the State Prize of the USSR (1950) and the Prize of the Academy of Science of the USSR (1956).

**5.1.2. Monographs Published since 1959.** A new tendency in this period was the publication of collective multivolume monographs in research areas of the institute. Among them are:

*Methods of Shell Design* (in five volumes, 1980–1982) [20];

*Mechanics of Composite Materials and Structural Members* (in three volumes, 1982–1983) [21];

*Spatial Problems in the Theory of Elasticity and Plasticity* (in six volumes, 1984–1986) [22];

*Mechanics of Coupled Fields in Structural Members* (in five volumes, 1987–1989) [23];

*Nonclassical Problems in Fracture Mechanics* (in four volumes, five books, 1990–1993) [24];

*Mechanics of Composite Materials* (in 12 volumes, 1993–2003) [25].

These fundamental monographs [20–25] include original scientific results obtained by scientists of the S. P. Timoshenko Institute of Mechanics and other research centers that cooperated with the institute. It should be noted that the monographs [20–25] seem to have nothing comparable in the world's scientific literature.

In this period, A. A. Martynyuk also contributed to the publishing of two international series of monographs: *Stability and Control: Theory, Methods and Applications* and *Stability, Oscillations and Optimization of Systems*.

There are also other monographs published by the institute in this period, including monographs in English, German, Chinese, and Polish. The achievements of the institute were awarded International Prizes, State Prizes of the USSR and the Russian Federation, State Prizes of Ukraine, Prize of the National Academy of Sciences of Ukraine, and various awards for young scientists.

*5.1.3. Monographs of the Institute Available in the Library of Congress.* Currently, the Library of Congress is one of the world's largest libraries. In this connection, we will briefly discuss the monographs of the S. P. Timoshenko Institute of Mechanics that are available in the famous Library of Congress, USA (see [7, 48] for more details). According to [7, 48], the Library of Congress contains 218 monographs of the S. P. Timoshenko Institute of Mechanics published in 1933–2010. The number of these monographs is certainly greater now because the paper [48] was published in 2011, i.e., the most recent monographs on that list were published in 2010. Actually, the list contains a greater number of monographs because, for example, all the 12 volumes of the series [25] are given the same catalog number.

The catalogue number and reading room where monographs are available are indicated in [7, 48] for each monograph of the institute in the Library of Congress. Information on these monographs can be found at any scientific center all over the world through the Library of Congress Online Catalog at <http://catalog.loc.gov/>.

*5.2. A Monograph on the Occasion of the 100th Anniversary.* The institute plans to publish the three-volume collection *Modern Problems in Mechanics* on the occasion of the 100th anniversary of the National Academy of Sciences of Ukraine and the S. P. Timoshenko Institute of Mechanics. The collection will include reviews on various subjects written by leading scientists of the institute and published in *Prikladnaya Mekhanika* in Russian and in *International Applied Mechanics* in English, since 2011 [39, 42, 47, 49, 50, 52–54, 63–66, 72, 73, 76].

It should be noted the six-volume seven-book collective series *Advances in Mechanics* (2005–2011) [37] is a collection of reviews published in *Prikladnaya Mekhanika (International Applied Mechanics)* in 2000–2009. From 2000 through 2009, *Prikladnaya Mekhanika* published review papers devoted the beginning of the Third Millennium and concerned with important research areas of mechanics actively developed in various countries. Over the 10 years, the journal published about 170 reviews by authors from 26 countries (Austria, Azerbaijan, England, Armenia, Bulgaria, Hungary, Germany, Israel, Spain, Italy, Kazakhstan, Canada, China, Colombia, Latvia, Mexico, Poland, Russia, Slovakia, the USA, Turkey, Uzbekistan, Ukraine, France, Czechia, Scotland). The same reviews have also been translated into English and published in *International Applied Mechanics*. This collection [37] (170 reviews written by authors from 26 countries) have nothing comparable in the world's literature on mechanics.

Unlike [37], the three-volume collection *Modern Problems in Mechanics* includes reviews only in research fields of the S. P. Timoshenko Institute of Mechanics.

This completes the brief analysis of how the world's scientific community has recognized the scientific achievements of the S. P. Timoshenko Institute of Mechanics.

**6. Conclusions.** We have discussed how the world's scientific community has recognized the scientific achievements of the Institute of Mechanics since 1918. An important aspect of the activity of the institute is the publication of the multivolume collective books [20–25, 37] in 1980–2011, which have nothing comparable in the world's literature on mechanics.

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