ENCYCLOPEDIA OF THERMAL STRESSES

(Springer, 2014, Vol.1 – Vol. 11)

In December of 2013, the *Encyclopedia of Thermal Stresses* (ETS) was published by Springer. The ETS is the largest scientific publication devoted to the field of Thermal Stresses. It is published in both print and electronic format and consists of 11 volumes, comprising LXXXIII+6643 pages. The ETS is organized as a collection of entries (from 2 pages up to about 15 pages long) in the alphabetical order by the first letter of the entry title. In addition to the topics on Thermal Stresses, the ETS contains entries on related topics, the Theory of Elasticity, Thermodynamics, appropriate topics on Applied Mathematics and Numerical Methods, Methodology of Experimental Testing, etc. The material of the ETS covers the basic knowledge regarding the mentioned topics, including some textbook information, as well as a wide range of new results in advanced theory of Thermal Stresses, the historic surveys, controversial ideas presented in appropriate form, and the prospects for future development of the Thermal Stresses theory. Such mixture makes the ETS attractive to the readers of different scientific level and interest – graduate students and engineers, lectors and scientific researchers.

The Editor of the ETS is Dr. Richard B. Hetnarski*, Professor Emeritus in the Department of Mechanical Engineering at Rochester Institute of Technology, Rochester, NY.

Prof. Richard B. Hetnarski
Editor-in-Chief of the ETS

*Richard B. Hetnarski is an outstanding scientist well known to the world in the area of thermomechanics. He presents the scientific school of the late Professor Witold Nowacki, great Polish scientist, who was one of the founders of the modern thermoelasticity theory, Academician (since 1952) and President (1978 – 1980) of the Polish Academy of Sciences. Professor Hetnarski is the founder (with Professor Noda, 1995) and president of the International Congresses on Thermal Stresses. These Congresses are held every two years, consecutively on three continents – Asia, America, and Europe. In 1978, he founded the Journal of Thermal Stresses, a monthly journal, and he has been its Editor-in-Chief ever since. He served for thirteen years (1988–2001) as an Associate Editor of Applied Mechanics Reviews. He is an author of four books: *Thermal Stresses* (by N. Noda, R. B. Hetnarski, and Y. Tanigawa), 1st edition, Lastran, 2000, and 2nd edition, Taylor & Francis, 2003; *The Mathematical Theory of Elasticity* (by R. B. Hetnarski and J. Ignaczak), 1st edition, Taylor & Francis, 2004, and 2nd edition, CRC Press, 2011; *Thermal Stresses – Advanced Theory and Applications* (by R. B. Hetnarski and M. R. Eslami), Springer, 2009; and *Theory of Elasticity and Thermal Stresses – Explanations, Problems and Solutions* (by M. R. Eslami, R. B. Hetnarski, J. Ignaczak, N. Noda, N. Sumi, and Y. Tanigawa), Springer, 2013. He is the Editor of the five-volume *Thermal Stresses* handbook which was published by Elsevier in Amsterdam and by Lastran Corp. in Rochester in the years 1986–1999. Professor Hetnarski is a member of International Editorial Board of the journal *Mathematical Methods and Physico-Mechanical Fields.* (Remark by the Editorial Board.)

Meeting of the ETS Section Editors during 9-th International Congress on Thermal Stresses (Budapest, Hungary, 2011)

Seating, from left: Marina V. Shitikova, Piergiovanni Marzocca, Harry H. Hilton, Richard B. Hetnarski, Andras Szekeres, Naotake Noda

Standing, from left: Theodore R. Tauchert, Fumihiro Ashida, Sei Ueda, Jan Taler, Yuriy A. Rossikhin, M. Reza Eslami, Ching-Kong Chao, Cun-Fa Gao, Dorin Iesan, Stan Chiriță, Vincenzo Tibullo and Vittorio Zampoli (representing Michele Ciarletta), Roman M. Kushnir

The project of such magnitude required a number of scientists in the area of Thermal Stresses to serve as Section Editors. Each of them took a responsibility for a certain subject, called a Section (approximately 50 essays or 200 pages). The duties of Section Editors consisted of selection of the material, invitation of the authors of entries, editing and scientific revision of the submitted entries, harmonization of the received entries with general contents of the ETS, organization of cooperation between the authors and the publisher, etc. For this purpose, a number of scientists from various scientific centers were invited. Many of them are the members of the International Organizing Committee of the International Congress on Thermal Stresses as well as of the Editorial Board of the Journal of Thermal Stresses. These scientists are: Fumihiro Ashida (Shimane University, Matsue, Japan), James Richard Barber (University of Michigan, Ann Arbor, USA), Janice Barton (University of Southampton, Southampton, UK), Erasmo Carrera (Politecnico di Torino, Torino, Italy), Ching-Kong Chao (National Taiwan University of Science and Technology, Taipei), Stan Chiriță (University of Iasi, Iasi, Romania), Michele Ciarletta (University of Salerno, Fisciano, Italy), M. Reza Eslami (Amirkabir University of Technology, Tehran, Iran), Cun-Fa Gao (Nanjing University of Aeronautics and Astronautics, Nanjing, China), Harry H. Hilton (University of Illinois at Urbana-Champaign, Urbana, USA), Dorin Ieșan (University of Iasi, Iasi, Romania), Tatsuo Inoue (Fukuyama University, Hiroshima Pref., Japan), Roman M. Kushnir (Pidstryhach Institute for Applied Problems of Mechanics and Mathematics, National Academy of Sciences of Ukraine, Lviv, Ukraine), Anatoly G. Lanin (Scientific Institute of Scientific Industrial Association "LUCH", Podolsk, Russia), Lars-Erik Lindgren (Lulea University of Technology, Lulea, Sweden), Piergiovanni Marzocca (Clarkson University, Potsdam, USA), Gerard A. Maugin (Universite Pierre et Marie Curie, Paris, France), Roderick Melnik (Wilfrid Laurier University, Waterloo, Canada), Angelo Morro (University of Genova, Genova, Italy), Naotake Noda (Shizuoka University, Hamamatsu, Japan), Hany H. Sherief (University of Alexandria, Alexandria, Egypt), Ephraim Suhir (University of California at Santa Cruz, Santa Cruz, USA), Jan Taler (Cracow University of Technology, Cracow, Poland), Kumar K. Tamma (University of Minnesota, Minneapolis, USA), Theodore R. Tauchert (University of Kentucky, Lexington, USA), Yuriy V. Tokovyy (Pidstryhach Institute for Applied Problems of Mechanics and Mathematics, National Academy of Sciences of Ukraine, Lviv, Ukraine), Andrzej Tylikowski (Warsaw University of Technology, Warsaw, Poland), Sei Ueda (Osaka Institute of Technology, Osaka, Japan), Xinwei Wang (Iowa State University, Ames, USA).

During nearly three years, Section Editors invited more than 510 authors of over 780 entries that comprise the ETS. A substantial contribution to the successful realization of this international project was done by Post-Soviet scientific schools, particularly, by Ukrainian scientists. In what follows, we briefly describe their input.

It is worth noting that two sections of the ETS, titled "Analytical (Computational) Thermomechanics" (edited by R. M. Kushnir) and "Thermal Stress Resistance. Experimental Methods" (co-edited by A. G. Lanin and Yu. V. Tokovyy) are presented in major part by the reach scientific experience of the well-known schools of thermomechanics in Ukraine and Russia, particularly, by the ones created by academicians A. D. Kovalenko (Kyiv) and Ya. S. Pidstryhach (Lviv), corresponding-member of the Russian Academy of Sciences E. I. Grigolyuk (Moscow), as well as scientific centers of Dnipropetrovsk, Donetsk, Saint-Petersburg, Novosibirsk, and others.

The first of these sections is represented by 27 entries [1–27]. They present, in particular, development of the mathematical models in local-gradient thermomechanics [1] originated by corresponding-member of NAS of Ukraine Ya. Yo. Burak (Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine, Lviv), thermomechanics of thin shells [17] within the framework of the theory developed with supervision of academician Ya. S. Pidstryhach, numerical methods for investigation of thermoelastic behavior of nonhomogeneous anisotropic shells [4] developed by academician of Ukraine Ya. M. Grigorenko, A. Ya. Grigorenko, and their followers in Timoshenko Institute of Mechanics of NAS of Ukraine. Recent development in the dominant methods for analysis of thermoelastic behavior of compound finite solids presented in entry [5] by academician of NAS of Ukraine V. T. Grinchenko (Institute of Hydromechanics of NAS of Ukraine, Kyiv). The achievements of Ukrainian scientists in application of the potential methods concerning the thermoelastic response of the solids with cracks presented in entry [8] by corresponding-member of NAS of Ukraine H. S. Kit. Development of scientific ideas of Yu. M. Kolyano, – the outstanding Ukrainian scientist in the area of thermomechanics, and his followers – R. M. Kushnir, corresponding-member of NAS of Ukraine, and V. S. Popovych and B. V. Protsyuk is presented in [9, 10, 13], where some aspects of application of the generalized functions theory to solving the problems of heat conduction and thermoelasticity theories for piece-wise nonhomogeneous solids are presented along with analysis of the fields of temperature and stresses in thermosensitive solids subjected to complex heat-exchange conditions and advances in application of the Green function method for thermoelasticity of nonhomogeneous media.

Two entries [20, 21] are devoted to the method of direct integration proposed by V. M. Vihak (Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine) for solution of the elasticity and thermoelasticity problems for homogeneous and continuously non-homogeneous solids. Development of his ideas on application of the method of inverse problem of thermomechanics for solution of the optimization problems and control problems on thermal stress state of elastic and elastoplastic solids, is shown in [25].

A number of entries deal with the subject which is typical for Lviv School of Thermomechanics – mechanics of coupled fields. The essays [2] by V. F. Chekurin and [3] by O. R. Hachkevych and B. D. Drobenko (Pidstryhach

Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine) are devoted to current problems of thermomechanics of electroconductive bodies and semiconductors. Different aspects of thermomechanical response of piezoactive elements are reflected in entry [27] by Ya. O. Zhuk of Taras Shevchenko National University of Kyiv and I. O. Guz of the University of Aberdeen (Scotland), as well as in [11] by V. V. Loboda of Dnipropetrovsk National University, and K. P. Herrmann of Paderborn University, Germany. Selected topics on thermomechanical performance of inelastic solids are presented in [7, 15] by V. G. Karnaukhov, I. K. Senchenkov and their followers, as well as in entry [18] by academician of NAS of Ukraine Yu. M. Shevchenko (Timoshenko Institute of Mechanics of NAS of Ukraine) and P. O. Steblyanko (Dniprodzerzhynsk State Technical University).

Several entries are concerned with thermoelastic performance of thin coatings and inclusions. In particular, recently developed methods for analysis of thermal stresses in bodies with thin inclusions are shown in entry [19] by H. T. Sulym of Ivan Franko National University of Lviv, and Ia. M. Pasternak (Lutsk National Technical University). Application of the method of generalized boundary conditions to solution of the problems of heat conduction and thermoelasticity for bodies with thin coatings is presented by V. A. Shevchuk (Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine) [16]. Problems on thermal stress analysis in multiply-connected solids are discussed in entry [6] by S. A. Kaloerov (Donetsk National University). The fundamentals of fractional thermoelasticity are presented [14] by the scientist of the scientific school of academician Pidstryhach and now – Professor of Jan Długosz University in Częstochowa – Yu. Z. Povstenko. Entry [26] by the scientist of Lviv School and now – Professor of Bialystok University of Technology – A. Yevtushenko and his co-author M. Kuciej is devoted to the problem of temperature-frictional disturbance of stress state which occurs during contact interaction.

Achievements of Russian scientists are presented within this section by: entries [22–24] by D. V. Tarlakovskii with colleagues (State University of Aerospace Technologies, Moscow, Russia). These entries present the results on dynamical processes in thermo-magneto-elastic and thermo-elasto-diffusive bodies, averaging method in thermoelasticty problems for composite materials, and the method for asymptotic separation of variables; entry [12] by Yu. V. Nemirovsky (Khristianovich Institute of Theoretical and Applied Mechanics, Siberian Branch of RAS, Novosibirsk, Russia), which is devoted to the problems of heat conduction and thermal stress occurrence in composite structures made in different means.

An important contribution to section "Thermal Stress Resistance. Experimental Methods" (consisting of 31 entries) was prepared by widely known Russian and Ukrainian scientific schools of experimental mechanics. In particular, entry [28] by G. A. Gogotsi (G. S. Pisarenko Institute for Problems of Strength of NAS of Ukraine) deals with experimental methods for investigation of brittle-thermal fracture of ceramics. A number of entries [29 – 34] were contributed by the sectional editor, A. G. Lanin ("LUCH", Podolsk, Russia) with coauthors. They present the methods for experimental investigation of thermal resistance of elastic and brittle materials, basic conception of thermal resistance, problems of experimental set-up for elastic fracture, residual stresses of thermal nature. In a great measure, the material presents the results of experimental research provided by A. G. Lanin and corresponding-member of the Russian Academy of Sciences I. I. Fedik with their followers at "LUCH" since 1965. Problems of experimental research and mathematical modeling of thermal shock destruction for refractory linings of metallurgical installations are considered in [35] by A. V. Zabolotsky ("Magnezit Group", Saint-Petersburg, Russia).

Besides the two considered sections, Ukrainian scientists presented a number of entries to other sections of the ETS. These are the entries [36, 37] by A. Yevtushenko and coauthors on modeling of frictional heat generation during braking and thermal splitting of a homogeneous body with coating due to laser radiation. In entry [38] by V. G. Karnaukhov, the problem on vibration and dissipative heating of inelastic piezothermal elements is considered. The problems on control of residual thermal stresses are addressed in [39] by scientists of the Institute of Material Science of NAS of Ukraine – M. Lugovy and V. Slyunyaev. Entry [40] was contributed by the former scientific researcher of the Timoshenko Institute of Mechanics, V. V. Zozulya (Centro de Investigacion Cientifica de Yucatán, Merida, Mexico).

Launching of the ETS during 10-th International Congress on Thermal Stresses (Nanjing, China, 2013)
From left: J. N. Sharma (India), R. M. Kushnir (Ukraine), Sh. Li (China), R. B. Hetnarski (USA), B. T. Maruszewski (Poland), Yu. V. Tokovyy (Ukraine)

Let us mention entries contributed by the scientists of different schools of former USSR. In particular, Professors of the Tallinn University of Technology – M. Antonov and J. Pirso devoted their entry [41] to the problems of experimental research of thermal shock resistance of chromium carbide based cermets. Different aspects of formulation and solution of the problems of elasticity and thermoelasticity for anisotropic bodies are discussed in entries [42, 43] by Yu. A. Bogan (M. A. Lavrentiev Institute of Hydrodynamics, Siberian branch of RAS, Novosibirsk, Russia). V. Şeremet (Institute of Mathematics and Computer Sciences, Academy of Sciences of Moldova, Chisinau, Moldova) presented [44] general approaches for application of the Green function technique for solution of three-dimensional problems of thermoelasticity. A significant input consisting of 8 entries [45–52] belongs to Yu. A. Rossikhin and M. V. Shitikova (Voronezh State University of Architecture and Civil Engineering, Voronezh, Russia). Their entries are devoted to the dynamic problems of thermoelastic wave propagation, thermal radiation, and dynamic contact problems. A number of entries [53–58] on different aspects of the potential theory application contributed by the scientist representing the Georgian scientific school of academician I. Vekua – M. Svanadze (Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia). In [59–61], D. Natroshvili

(Technical University of Georgia, Tbilisi) discussed problems of micropolar theory of thermoelasticity and some types of thermoelastic oscillations. A number of entries [62–72] by Armenian scientists from the Institute of Mechanics of National Academy of Sciences of Armenia are devoted to problems of static and dynamics of composite magneto-thermo-electro-conductive elastic bodies and thin-wall structural members.

The ETS was under preparation for over three years. The successful completion became possible by active input of invited authors, assiduous work of section editors, and by well-organized cooperation between the authors and Springer. An important role for success of the ETS was played by the coordination meetings of section editors of the ETS during the 9-th International Congress on Thermal Stresses (ICTS) (5 – 9 June 2011, Budapest University of Technology and Economics and Hungarian Academy of Sciences, Budapest, Hungary; Congress Chair – András Szekeres) and the 10-th ICTS (31 May – 4 June 2013, Nanjing University of Aeronautics and Astronautics, Nanjing, China; Congress Chair – Cun-Fa Gao). During the latter, on 2 Jun 2013, the official launching ceremony for ETS was organized in a special session of the Congress. This ceremony was opened by the Congress Chair Cun-Fa Gao. The speakers were the Editor of the ETS R. B. Hetnarski, Shen Li (Springer's Physical Sciences & Engineering Editor in China), section editors and authors of the ETS. It was remarked that the ETS is very important and unique publication in the area of physics and engineering as it presents a sheer collection of knowledge on Thermal Stresses. On the other hand, it is accessible to a wide circle of readers and may be used for teaching, scientific research and engineering practice.

1. *Burak Ya., Nahirnyj T., Tchervinka K.* Local gradient thermomechanics // In: *R. B. Hetnarski* (ed.). Encyclopedia of Thermal Stresses. – Springer, 2014. – Vol. 6. – P. 2794–2801.
2. *Chekurin V. F.* Thermoelasticity of semiconductors: the many-continuum thermodynamic approach // Ibid. – Vol. 11. – P. 5844–5858.
3. *Drobenko B., Hachkevych O.* Thermomechanics of electroconductive solids // Ibid. – Vol. 11. – P. 6052–6063.
4. *Grigorenko Ya., Grigorenko A.* Numerical approaches to solving thermostress problems for inhomogeneous anisotropic shells using various models // Ibid. – Vol. 7. – P. 3412–3419.
5. *Grinchenko V. T.* Finite elastic solids, thermal stress // Ibid. – Vol. 4. – P. 1600–1604.
6. *Kaloerov S.* Multiply connected anisotropic plates, thermal stress // Ibid. – Vol. 6. – P. 3273–3284.
7. *Karnaukhov V. G.* Forced harmonic vibrations and dissipative heating of nonelastic bodies // Ibid. – Vol. 4. – P. 1711–1722.
8. *Kit H.* Potential methods in the spatial problems of heat conduction and thermoelasticity for solids with cracks // Ibid. – Vol. 7. – P. 4007–4013.
9. *Kushnir R., Popovych V.* Application of the generalized functions method for analysis of thermal stresses in piecewise-homogeneous solids // Ibid. – Vol. 1. – P. 224–230.
10. *Kushnir R., Protsiuk B.* Determination of the thermal fields and stresses in multilayer solids by means of the constructed Green functions // Ibid. – Vol. 2. – P. 924–931.
11. *Loboda V. V., Herrmann K. P.* Contact zone model for an interface crack in a piezoelectric bimaterial under thermoelectromechanical loadings // Ibid. – Vol. 2. – P. 676–682.
12. *Nemirovsky Yu. V.* Heat conduction and thermoelasticity of composite structures // Ibid. – Vol. 5. – P. 2134–2144.
13. *Popovych V.* Methods for determination of the thermo-stressed state of thermosensitive solids under complex heat exchange conditions // Ibid. – Vol. 6. – P. 2997–3008.
14. *Povstenko Yu.* Fractional thermoelasticity // Ibid. – Vol. 4. – P. 1778–1787.
15. *Senchenkov I. K., Chervinko O. P., Banyas M. V.* Modeling of thermomechanical process in growing viscoplastic bodies with accounting of microstructural transformation // Ibid. – Vol. 6. – P. 3147–3157.

16. *Shevchuk V. A.* Generalized boundary conditions to solving thermal stress problems for bodies with thin coatings // Ibid. – Vol. 4. – P. 1942–1953.
17. *Shvets R., Flyachok V.* Thermoelasticity of thin shells // Ibid. – Vol. 11. – P. 5858–5870.
18. *Steblyanko P., Shevchenko Yu.* Computational methods in stationary and nonstationary thermal-plasticity problems // Ibid. – Vol. 2. – P. 623–630.
19. *Sulym H., Pasternak Ia.* Jump function method and BEM technique for determination of thermal stresses in solids with thin inclusions // Ibid. – Vol. 5. – P. 2605–2619.
20. *Tokovyy Yu. V.* Direct integration method // Ibid. – Vol 2. – P. 951–960.
21. *Tokovyy Yu. V., Kalynyak B. M., Ma C.-C.* Nonhomogeneous solids: integral equations approach // Ibid. – Vol 7. – P. 3350–3356.
22. *Vestyak V. A., Zemskov A. V., Tarlakovskii D. V.* Dynamic processes in thermo-electro-magneto-elastic and thermo-elasto-diffusive media // Ibid. – Vol. 2. – P. 1064–1071.
23. *Vestyak V. A., Zemskov A. V., Tarlakovskii D. V.* Method of averaging in problems of thermoelasticity of composite materials // Ibid. – Vol. 6. – P. 2982–2990.
24. *Vestyak V. A., Zemskov A. V., Tarlakovskii D. V.* Method of asymptotic separation of variables in problems of thermoelasticity // Ibid. – Vol. 6. – P. 2977–2982.
25. *Yasinskyy A.* Determination and optimization of stress state of bodies on the basis of inverse thermoelastisity problems // Ibid. – Vol. 2. – P. 916–924.
26. *Yevtushenko A., Kuciej M.* One-dimensional analytical models of frictional heating during braking // Ibid. – Vol. 7. – P. 3445–3452.
27. *Zhuk Ya. A., Guz I. A.* Dissipative heating of thin-wall structures containing piezoactive layers // Ibid. – Vol. 2. – P. 971–985.
28. *Gogotsi G. A.* Brittleness measure of ceramics // Ibid. – Vol. 1. – P. 497–505.
29. *Lanin A. G., Pranckevicius G.* Heating methods of testing for thermal stress resistance // Ibid. – Vol. 5. – P. 2203–2209.
30. *Lanin A. G.* Historic evolution of thermal stress resistance concept // Ibid. – Vol. 5. – P. 2275–2280.
31. *Lanin A. G., Egorov V. S.* Fracture of elastic-brittle bodies at combined thermal and mechanical loadings // Ibid. – Vol. 4. – P. 1798–1802.
32. *Egorov V. S., Lanin A. G.* Growing cracks and redistribution of thermal stresses in thermal-loaded disk // Ibid. – Vol. 4. – P. 2103–2107.
33. *Lanin A. G., Derjavko I. I.* Influence of residual stresses on fracture at thermal loading // Ibid. – Vol. 5. – P. 2500–2504.
34. *Lanin A. G., Derjavko I. I.* Modeling of residual stress formation on thermal-stress resistance of nuclear fuel elements // Ibid. – Vol. 6. – P. 3123–3128.
35. *Zabolotsky A. V.* Thermal shock and modeling of destruction for refractory linings of metallurgical installations // Ibid. – Vol. 9. – P. 5083–5097.
36. *Yevtushenko A., Grzes P.* FEM-modeling of frictional heating during braking // Ibid. – Vol. 4. – P. 1561–1569.
37. *Yevtushenko A., Rozniakowska-Klosinska M.* Laser-induced thermal splitting in homogeneous body with coating // Ibid. – Vol. 6. – P. 2707–2719.
38. *Karnaukhov V. G.* Piezothermo-inelastic behavior of structural elements: vibrations and dissipative heating // Ibid. – Vol. 7. – P. 3910–3920.
39. *Orlovskaya N., Lugovy M., Slyunyayev V., Kuebler J.* Control of thermal residual stresses // Ibid. – Vol. 2. – P. 727–733.
40. *Zozulya V. V.* Variational formulation and nonsmooth optimization algorithms in elastostatic contact problems for cracked body // Ibid. – Vol. 11. – P. 6327–6341.
41. *Antonov M., Pirso J.* Thermal shock resistance of chromium carbide-based cermets // Ibid. – Vol. 9. – P. 5128–5135.
42. *Bogan Yu. A.* Boundary value problems in two-dimensional elastostatics of anisotropic solids // Ibid. – Vol. 1. – P. 447–458.
43. *Bogan Yu. A.* Two-dimensional problems in thermo-elastostatics of anisotropic solids // Ibid. – Vol. 11. – P. 6256–6260.
44. *Şeremet V.* Green's functions in three-dimensional thermoelastostatics // Ibid. – Vol. 4. – P. 2061–2070.
45. *Rossikhin Yu. A., Shitikova M. V.* Boundary-value problems resulting in thermoelastic shock wave propagation // Ibid. – Vol. 1. – 474–486.
46. *Rossikhin Yu. A., Shitikova M. V.* D'Alembert method in dynamic problems of thermoelasticity // Ibid. – Vol. 2. – 859–872.
47. *Rossikhin Yu. A., Shitikova M. V.* Harmonic waves in an anisotropic medium generated by heat sources distributed along the plane // Ibid. – Vol. 5. – P. 2120–2134.

48. *Rossikhin Yu. A., Shitikova M. V.* Hyperbolic thermoelasticity, transient dynamic contact problems // Ibid. – Vol. 5. – P. 2343–2361.
49. *Rossikhin Yu. A., Shitikova M. V.* Ray expansion theory // Ibid. – Vol. 8. – P. 4108–4131.
50. *Rossikhin Yu. A., Shitikova M. V.* Ray method for solving boundary-value problems of anisotropic thermoelasticity with thermal relaxation // Ibid. – Vol. 8. – P. 4131–4146.
51. *Rossikhin Yu. A., Shitikova M. V.* Thermal shock upon thin-walled beams of open profile // Ibid. – Vol. 9. – P. 5146–5167.
52. *Rossikhin Yu. A., Shitikova M. V.* Transient thermoelastic Rayleigh waves on the surfaces of bodies of revolution // Ibid. – Vol. 11. – P. 6225–6244.
53. *Scalia A., Svanadze M.* Basic theorems in thermoelastostatics of bodies with microtemperatures // Ibid. – Vol. 1. – P. 355–365.
54. *Scalia A., Svanadze M.* Representations of solutions in thermoelasticity theory // Ibid. – Vol. 8. – P. 4194–4203.
55. *Svanadze M.* Fundamental solutions in thermoelasticity theory // Ibid. – Vol. 4. – P. 1901–1910.
56. *Svanadze M.* Fundamental solutions in thermoelastostatics of micromorphic solids // Ibid. – Vol. 4. – P. 1910–1917.
57. *Svanadze M.* Large existence of solutions in thermoelasticity theory of steady vibrations // Ibid. – Vol. 6. – P. 2677–2687.
58. *Svanadze M.* Potentials in thermoelasticity theory // Ibid. – Vol. 7. – P. 4013–4023.
59. *Natroshvili D.* Boundary value problems of elastostatics of hemitropic solids // Ibid. – Vol. 1. – P. 458–468.
60. *Natroshvili D.* Mathematical problems in thermoelastostatics of hemitropic solids // Ibid. – Vol. 6. – P. 2907–2918.
61. *Natroshvili D.* Thermo-radiating conditions: Somigliana type integral representations // Ibid. – Vol. 11. – P. 6076–6084.
62. *Baghdasaryan G. Y., Mikilyan M. A.* Dynamic stability of electroconductive cylindrical shells in magnetic field // Ibid. – Vol. 2. – P. 1071–1084.
63. *Baghdasaryan G. Y., Mikilyan M. A.* Vibrations of electroconductive cylindrical shells in a magnetic field // Ibid. – Vol. 11. – P. 6450–6462.
64. *Baghdasaryan G. Y., Mikilyan M. A., Marzocca P.* Ferromagnetic plates and shells // Ibid. – Vol. 4. – P. 1570–1580.
65. *Baghdasaryan G. Y., Mikilyan M. A., Marzocca P.* Thermoelastic stability of panels in high-speed flows: linear analysis // Ibid. – Vol. 10. – P. 5737–5747.
66. *Baghdasaryan G. Y., Mikilyan M. A., Marzocca P.* Thermoelastic stability of panels in high-speed flows: nonlinear analysis // Ibid. – Vol. 10. – P. 5747–5759.
67. *Hasanyan D., Li J., Viehland D.* Thermo-magneto-electro-elastic multilayer composites: effective properties and magneto-electric coefficients // Ibid. – Vol. 11. – P. 5940–5949.
68. *Hasanyan D., Marzocca P., Avetisyan A., Qin Z., Li J., Viehland D.* Magneto-thermo-elastic equations of thin electroconductive isotropic shells and plates: nonlinear equations // Ibid. – Vol. 6. – P. 2853–2862.
69. *Hasanyan D., Qin Z., Li J., Viehland D.* Electroconductive composites subjected to magnetoelastic and thermomechanical loadings: nonlinear response and stability // Ibid. – Vol. 3. – P. 1203–1214.
70. *Hasanyan D., Qin Z., Avetisyan A., Marzocca P.* Magneto-thermo-elastic equations of thin electroconductive isotropic shells and plates: linear equations // Ibid. – Vol. 6. – P. 2845–2853.
71. *Mikilyan M.* Numerical investigation of magnetothermoelastic bending of superconductive plate // Ibid. – Vol. 7. – P. 3419–3425.
72. *Qin Z., Hasanyan D.* Magneto-thermo-elasticity of laminated composite plates incorporating structural nonlinearity // Ibid. – Vol. 6. – P. 2873–2882.

R. M. Kushnir,
Yu. V. Tokovyy

Pidstryhach Institute for Applied Problems of Mechanics
and Mathematics, National Academy of Sciences of Ukraine, Lviv