

**Alexander FAINLEIB**

(Oleksandr Markovych FAINLEIB)

**Nationality:** Ukrainian**Phone:** +380445595372 (office), +380675050399 (mobile)**E-mail:** [fainleib@i.ua](mailto:fainleib@i.ua), **skype:** a.fainleib**Web site:** <http://fainleib.jimdo.com>**Languages:** English, Ukrainian, Russian.**Corresponding Member of the National Academy of Sciences of Ukraine,**  
Professor, Doctor of Sciences, Ph.D.Institute of Macromolecular Chemistry of National Academy of Sciences of  
Ukraine (IMC NASU).**Polymers: Synthesis, Kinetics, Structure-Properties Relationships,**  
**Recycling, Polymer (nano)composites.*****h*-index – 22 (Scopus, citations – 1406), 24 (Google Scholar, citations – 1835)****ORCID ID:** <https://orcid.org/0000-0001-8658-4219>**Scopus Author ID:** [7003456808](https://orcid.org/0000-0001-8658-4219)**Web of Science Researcher ID:** [F-3205-2016](https://orcid.org/0000-0001-8658-4219)

Prof. A. Fainleib joined the IMC NASU in 1985 after completing a PhD at Institute of Organo-Element Compounds of Russian Academy of Sciences in Moscow. As a post-graduate student he worked in the field of a synthesis and characterization of thermoreactive nitrogen-containing polymers and composites with well-known Professors V.A. Pankratov and V.V. Korshak.

He has a Dr.Sc. degree (1996). The title of thesis “Triazine-containing copolymers and interpenetrating polymer networks”. He is a **Professor in Macromolecular Chemistry since 2005**.

In 2018 he was elected as **Corresponding Member of the National Academy of Sciences of Ukraine** on specialty Macromolecular Chemistry.

In 2019 he was conferred by the title of **Honorary Professor of Qingdao University, China**.

In 2019 he was elected by Identification Committee of Ukraine as a **Member of Scientific Committee of National Council of Ukraine on Science and Technology Development**.

In 2020 he was elected as a **Member of Scientific-Technical Council of Ukraine on formation and implementation of state order for scientific-technical products**.

**Area of expertise:**

Study of reactions of cyclotrimerization of organic compounds terminated with C-N-multiple bonds: isocyanates, cyanate esters, carbodiimides and their interactions with reactive monomers, such as epoxies, glycols, amines, hydrazides, hydrazones on model, oligomeric and polymer systems. Synthesis of triazinecontaining polymers, copolymers, hybrid and interpenetrating polymer networks (IPNs). Chemical and physical modification of crosslinked polymers. Kinetics of synthesis and structure-property relationships for polymer materials obtained. Characterization of phase structure of polymer blends and IPNs. Functionalization and compatibilization of components of polymer blends and IPNs, grafted semi-IPNs and linked IPNs. Thermoplastic elastomers, dynamic vulcanization of rubber phase in thermoplastic matrices. Recycling of thermoplastic and elastomeric wastes, including polyolefins and ground tire rubber. Kinetics of synthesis and structure-property relationships for polymer materials obtained, glass transition behavior and morphology. Rheological measurements, chemical analysis, infra-red spectroscopy, NMR, mass-spectrometry, X-ray analysis, DSC, DMA, TGA, DRS, TSDC techniques. Polymer processing, filming from solutions and melt, compression molding, injection molding, mechanical testing of polymer materials. Polymer composites with dispersed and fibrous fillers. Adhesion properties of polymers. Adhesives, coatings, sealants for electronic, aerospace and automotive industries. Nanocomposites, polymer nanocomposites of thermosets, thermoplastics, IPNs, filled with montmorillonite, carbon nanotubes, POSS. Porous films, nanoporous materials, membranes. Effect of irradiation on polymers structure and properties. Chemical and radiation-chemical modification of asphalt concrete, cement, concrete.

**Education and academic degrees:**

**1979, M.D.** – Chemist. Lecturer - Inorganic Chemistry (Sub)department, Chemical Faculty, Saratov University, Russian Federation;

**1984, Ph.D.** “Crosslinked oxazolidine-containing polymers. Synthesis and properties”, Chemistry of Macromolecular Compounds, Institute of Organo-Element compounds, Russian Academy of Sciences, Moscow, Russian Federation;

**1996, D.Sci.** “Triazine-containing copolymers and interpenetrating polymer networks”, Chemistry of Macromolecular Compounds, Institute of Macromolecular Chemistry of NASU, Kyiv, Ukraine;

**2005, Professor** - Chemistry of Macromolecular Compounds of NASU, Kyiv, Ukraine.

#### **Professional Experience:**

**2021 – Head of Department** of thermally stable polymers and nanocomposites, Institute of Macromolecular Chemistry of the National Academy of Sciences of Ukraine (IMC NASU), Kyiv, Ukraine;

**2018 – Head of laboratory** of thermally stable polymers and nanocomposites, Institute of Macromolecular Chemistry of the National Academy of Sciences of Ukraine (IMC NASU), Kyiv, Ukraine;

**1996-2018 - Leading Research Scientist**, Department of Heterochain Polymers and Interpenetrating Polymer Networks, Institute of Macromolecular Chemistry of the National Academy of Sciences of Ukraine (IMC NASU), Kyiv, Ukraine;

**1988-1996 - Senior Research Scientist**, Department of Interpenetrating Polymer Networks and Systems, IMC NASU, Kyiv, Ukraine;

**1987-1988 Research Scientist**, Department of Interpenetrating Polymer Networks and Systems, IMC NASU, Kyiv, Ukraine.

**1985-1986 Junior Research Scientist**, Department of Physical Chemistry of Polymers, IMC NASU, Kyiv, Ukraine.

**1982-1984 PhD student**, Laboratory of Thermal reactive Nitrogen-containing Polymers, Institute of Organo-Element Compounds, Russian Academy of Sciences, Moscow, Russia.

**1980-1981 Chemical Engineer**, Institute of iodine-bromine industry, Saki, Ukraine.

**Publications :** The total number of publications around 700, including 2 books, 18 Chapters in books, 280 Papers (around 150 in international journals), 63 Patents, > 330 Communications and Posters at international and national conferences, Scopus h-index = 22, number of citations – 1406.

**Supervision of thesis's:** Supervisor of 10 Ph.D. theses in specialty of Macromolecular Chemistry.

Founder of Ukrainian scientific school “Polymer systems based on densely crosslinked Cyanate Ester Resins”.

**The member of** International Scientific Committee and Prize Committee of World Forum on Advanced Materials POLYCHAR (2005-2022), “Modification, Destruction, Stabilization” (MoDeSt) (2000-2001), Society of Plastics Engineers (SPE Foundation); International Association of Advanced Materials (IAAM) (2017-2019); Honorary Member of Chemical Society of Georgia (2006-2019).

**The member of** Scientific Council of Institute of IMC NASU, Member of Specialized Scientific Council D08.078.03 on defense of the theses for the degree of Doctor (candidate) in the field of chemical sciences: 02.00.03. "Organic Chemistry", 02.00.06. "Macromolecular Chemistry" at the Ukrainian State University of Chemical Technology, Dnipro, Ukraine, Member of Specialized Scientific Council D26.179.01 (02.00.06. "Macromolecular Chemistry") at IMC NASU.

**The member of** Editorial Board of Archives of Advanced Chemistry, Journal of Chemical Society of Georgia (Georgia), Polymer Journal (Ukraine), Scientific and Technical Journal “AUTOMOBILE ROADS AND ROAD CONSTRUCTION”, “Nanosistemi, Nanomateriali, Nanotehnologii”, Open Macromolecules Journal, Bentham Open (until 2014), World Journal of Nano Science and Engineering, WJNSE (2012-2015).

**The reviewer at the** «Reactive and Functional Polymers», «Polymer Engineering & Science», «Thermochimica Acta», «Journal of Applied Polymer Science», «Construction & Building Materials», «International Journal of Polymer Science», «Journal of Polymer Engineering», «Macromolecular Symposia», «International Polymer Processing», «Revista Polímeros - Ciência e Tecnologia», «Applied Surface Science», «eXPRESS Polymer Letters», «Scientific Research and Essays», «Journal of Molecular Structure».

**The reviewer of the scientific projects** at Horizon 2020 (EU), Agence Nationale de la Recherche Département Recherches Exploratoires et Emergentes (ANR, France), National Research Foundation (South Africa).

#### **Visiting scientist:**

**1998:** Grant of Ministère de l'Éducation Nationale, de la Recherche et de la Technologie (France), Institut National des Sciences Appliquées de Lyon (INSA), Laboratoire des Matériaux Macromoléculaires (5 months);

The Royal Society Fellowship, Institute of Polymer Technology and Materials Engineering at Loughborough University, Loughborough, UK (2 months);

**1999:** Grant of Fraunhofer Verein, Fraunhofer Institut Zuverlässigkeit und Mikrointegration, Außenstelle Polymermaterialien und Composite, Teltow, Germany (3 months).

**2001:** SABIT Fellowship, University of North Texas, Department of Material Engineering, Denton, TX, USA (3 months);

NATO Fellowship, National Technical University, Department of Physics, Athens, Greece (2 months).

**2003:** The Royal Society Fellowship, Institute of Polymer Technology and Materials Engineering at Loughborough University, Loughborough, UK (2 months);

**2004:** NATO Fellowship, National Technical University, Department of Physics, Athens, Greece (2 months).

- 2006:** The Royal Society Fellowship and Joint Project, Chemical Engineering, Polymer & Composite Engineering Group, Imperial College London, UK (2 months).
- 2008:** The Royal Society Fellowship and Joint Project, Chemical Engineering, Polymer & Composite Engineering Group, Imperial College London, UK (1 month).
- 2009:** The Royal Society Fellowship and Joint Project, Chemical Engineering, Polymer & Composite Engineering Group, Imperial College London, UK (1 month).
- 2016:** Grant of Campus France, Institut de Chimie et des Matériaux Paris-Est (ICMPE), France (2 weeks).

#### Visiting professor:

- 2002:** Rouen University, France (5 months).
- 2003:** Rouen University, France (2 months).
- 2004:** Rouen University, France (2 months).
- 2006:** Rouen University, France (1 month).
- 2008:** University Claude Bernard Lyon 1 (1 month).
- 2009:** Rouen University, France (1 month).
- 2010:** INSA de Rouen, France (1 month).  
Universidad Autonomous Estate Mexico, Toluca, Mexico (1 month).
- 2012:** Universidade Federal do Rio de Janeiro, Instituto de Macromoleculas, Rio de Janeiro, Brasil (1 year).
- 2014:** National Technical University, Department of Physics, Athens, Greece (1.5 months).
- 2018:** INSA de Rouen, France (1 month).

#### Management of international projects:

1. Polymers and Composites for Advanced Technologies (1998-1999). *INTAS- network Project, EU, 97-1936*.
2. Recycling of crumb rubber and polyolefin wastes by producing thermoplastic elastomers (2001-2003), *INCO-Copernicus Program, Contract No ICA2-CT-2001-10003*, EU, Principal Investigator of the Ukrainian team.
3. Polymer materials for repair of aircrafts (2003-2007), *PENED 2003 (EU-Greece)*, Foreign Consultant.
4. Application of principle of IPNs, dynamic vulcanization and irradiation for compatibilization and reuse of polyethylene/rubber waste (2003-2006), *STCU Project No 3009 (EU)*, Project Coordinator.
5. Micro- and macro-reinforcement of asphalt concrete pavement with fibrous materials made in Ukraine and their waste (2006-2009), *STCU Project No 3569 (USA)*, Project Coordinator.
6. Matériaux Composites Nanostructurés Intelligents (2006-2007), *ECONET Project (Egide, France)*, Principal Investigator of the Ukrainian team.
7. Highly porous highly thermostable polymer foams from crosslinked polycyanurates (2008-2009), *The Royal Society Joint Grant*, Principal Investigator of the Ukrainian team.
8. Radiation-chemical modification of concrete for durability improvement in constructions working in extremal conditions (2009-2011), *STCU Project No 4599 (EU)*, Project Coordinator.
9. Development of new thermally stable membranes from polycyanurate-containing single networks and Interpenetrating Polymer Networks (2004-2005). *France (CNRS) – Ukraine (NASU) Project of Cooperation No 16813*. Principal Investigator of the Ukrainian team.
10. Application of principle of IPNs, dynamic vulcanization and irradiation for compatibilization and reuse of polyethylene/rubber waste (2006-2007) *France (CNRS) – Ukraine (NASU) (NASU) Project of Cooperation No 18969*. Principal Investigator of the Ukrainian team.
11. New thermostable track membranes obtained on the base of thin polycyanurate films (2006-2007). *France (CNRS) – Ukraine (NASU) Project of Cooperation No 18973*. Principal Investigator of the Ukrainian team.
12. Comparative investigation of different methods for engineering porous polycyanurate thermosets (2008-2009) *France (CNRS) – Ukraine (NASU) Project of Cooperation No 21294*. Principal Investigator of the Ukrainian team.
13. Novel thermostable nanoporous films based on polycyanurates for membrane and low permittivity materials (2011-2013). *France (CNRS) – Ukraine (NASU) Project of Cooperation, PICS No 5700*. Principal Investigator of the Ukrainian team.
14. Modification of bitumen by recycled post-consumer thermoplastics (polyethylene, polypropylene) with surface activated using physical and chemical approaches (2011-2013). *Turkish (TUBITAK) – Ukrainian (NASU) Project of Cooperation No 110M400*. Principal Investigator of the Ukrainian team.
15. Thalys-NTUA development of self healing composite materials and innovative techniques for structural health monitoring on aerospace applications. *Greek Project*. Foreign Consultant.
16. Novel nanoporous polycyanurate materials using ionic liquids as porogen (2014-2015). *France (CNRS) – Ukraine (NASU) Project of Cooperation No 26199*. Principal Investigator of the Ukrainian team.
17. Strategic and targeted support for Europe-Ukraine collaboration in aviation research (2016-2019). AERO-UA project. Horizon 2020 (EU). Group leader. Partners: Intelligentsia Consultants, Luxembourg (Coordinator), Fraunhofer Institute for Factory Operation and Automation, Germany, TECHNOLOGY PARTNERS, Poland, University of Manchester, UK, Ivchenko-Progress, Zaporozhye, FED, Kharkov,

- Ukrainian Research Institute of Aviation Technology, Kyiv, National Academy of Sciences of Ukraine, Kyiv, National Aerospace University “KhAI”, Kharkov.
18. Nanoporous Thermostable Polymer Materials (2017-2021). *France (CNRS) – Ukraine (NASU) Project: International Associated Laboratory (LIA)*. Project co-coordinator from Ukraine. Partners: Institut de Chimie et des Matériaux Paris-Est (ICMPE), Ingénierie des Polymères, Lyon I, France, Institute of Nuclear Research of NASU, Ukraine.
  19. Thermostable polymer materials based on synthetic and natural phenols (2022-2026). *France (CNRS) – Ukraine (NASU) International Research Project (IRP)*: Project co-coordinator from Ukraine. Partners: Institut de Chimie et des Matériaux Paris-Est (ICMPE), Ingénierie des Polymères, Lyon I, France, Institute of Nuclear Research of NASU, Ukraine.

### Management of the national projects

1. Development of nanotechnology of producing hybrid organic-inorganic composite nanomaterials of high thermal stability, adhesion strength and low dielectric loss for elements used in aerospace and electronics. *State Target R&D Program “Nanotechnologies and nanomaterials” NASU, Ukraine* (2010-2014). Project manager.
2. Development of effective methods of life cycle extension for bridges and building constructions using chemical and radiation-chemical modification of concretes. *Target Complex Program of Scientific Research of NASU “Problems of lifetime and exploitation security of constructions, buildings and machines („Lifetime”)* (2013-2015). Project manager.
3. Extension of service life of road surface by using thermoplastic elastomers based on waste polymers of different nature as modifiers for bitumen and asphalt. *Target Complex Program of Scientific Research of NASU “Reliability and durability of materials, structures, equipment and facilities” („Lifetime-2”)* (2016-2020). Project manager.
4. Development of novel high temperature resistant nano-structured binders for carbon fiber reinforced composites for aviation industry based on bisphthalonitrile of domestic production. *Target Program of Scientific Research of NASU “New functional compounds and materials of chemical production” within Budget Program “Support of the development of priority areas of scientific research”* (2019). Project manager.
5. Development of scientific principles and effective technologies for the creation and use of resource-saving modifiers based on polymer waste structured by multi-layered carbon nanotubes, as well as waste from heat and energy-generating enterprises, fly ash, as an additional filler to increase the operational characteristics and lifetime of cement and asphalt concretes. *Target Complex Program of Scientific Research of NASU “Scientific and technical problems of monitoring of state, evaluation and extension of lifetime of long-term structures, equipment and buildings (Lifetime-3)”* (2021-2025). Project manager.

### List of selected articles published for last 10 years

1. Günay T., Ahmedzade P., Hassanpour-Kasanagh S., Fainleib A., Starostenko O. Effect of maleic anhydride-grafted and gamma-irradiated recycled polypropylene on rheological properties of asphalt binder. *Intern. Journal of Pavement Eng.*, 2022. <https://doi.org/10.1080/10298436.2022.2046742>.
2. Hu Z., Zhao D., Wang Y., Gong X., Huang L., Wang J., Wang S., Mao S., Grigoryeva O., Strizhak P., Fainleib A., Tang J. The Created Excellent Thermal, Mechanical and Fluorescent Properties by Doping Eu<sup>3+</sup>-Complex-Anchored Carbon Nanotubes in Polycyanate Resins. *Nanomaterials* **12**(12), 2040 (2022). <https://doi.org/10.3390/nano12122040>.
3. Grigoryeva O., Fainleib A Starostenko O., Gusakova K., Sakhno V., Borzakovskiy A., Kovalinska T., Youssef B., Gouanve F., Espuche E., Grande D. Thermally Stable Nanoporous Cyanate Ester Resin / Linear Polyurethane Networks Created by Nuclear Technologies. *Polymer*, **228**, 2021, 123831.
4. Nguyen T.-T.-T., Grande D., Le Coeur C., Vashchuk A., Fainleib A., Torralba E., Bastide S. Versatile approach toward nanoporous polymers with gyroid-like morphology using metal templated synthesis. *Eur. Polym. J.* **153**, 110509 (2021).
5. Bershtein V.A., Fainleib A.M., Kirilenko D.A., Yakushev P.N. Cyanate Ester Resin/Silica subnanocomposites and their superiority over nanocomposites due to fundamental role of constrained interfacial dynamics. *J. Physics. Conference Series*, **2103**, 012100 (2021).
6. Yakushev P.N., Bershtein V.A., Fainleib A.M., Kirilenko D.A., Melnychuk O.G. Ultra-heat resistant nanocomposites based on heterocyclic networks: structure, properties, origin of thermal stability. *J. Physics. Conference Series* **2103**, 012113 (2021).
7. Yang N., Qi X., Di Yang, Zhang W., Chen M., Wang Y., Huang L., Grygoryeva O., Strizhak P., Fainleib A., Tang J. Improved mechanical, anti-UV irradiation and imparted Luminescence properties of Cyanate Ester Resin/unzipped Multiwalled Carbon Nanotubes/Europium nanocomposites. *Materials* **14**, 4244 (2021).

8. Bershtein V.A., Grigoryeva O.P., Yakushev P.N., Fainleib A.M. The nature of the exceptional impact of ultra-low silica contents on the properties of Cyanate Ester Resin based nano- and subnanocomposites. *Polymer Composites*, **42**, 6777–6784 (2021).
9. Bershtein V., Fainleib A., Yakushev P., Kirilenko D., Egorova L., Grigoryeva O., Ryzhov V., Starostenko O.. High performance multifunctional cyanate ester oligomer-based network and epoxy-POSS containing nanocomposites: Structure, dynamics, and properties. *Polymer Composites*, **41**(5), 1900-1912 (2020).
10. Bershtein V., Fainleib A., Yakushev P., Kirilenko D., Gusakova K., Markina D., Melnychuk O., Ryzhov V. High temperature phthalonitrile nanocomposites with silicon-based nanoparticles of different nature and surface modification: structure, dynamics, properties. *Polymer*, **165**, 39-54 (2019).
11. Bershtein V., Fainleib A., Yakushev P., Kirilenko D., Gusakova K., Markina D., Melnychuk O., Ryzhov V. High-temperature hybrid phthalonitrile / amino-MMT nanocomposites: synthesis, structure, properties. *eXPRESS Polym. Lett.*, **13**(7), 656–672 (2019).
12. Fainleib A., Grigoryeva O., Vashchuk A., Starostenko O., Rogalsky S., Rios de Anda A., Nguyen T.-T.-T., Grande D. Effect of ionic liquids on kinetic peculiarities of dicyanate ester polycyclotrimerization and on thermal and viscoelastic properties of resulting cyanate ester resins. *eXPRESS Polym. Lett.*, **13**(5), 469–483 (2019).
13. Vashchuk A., Rios de Anda A., Starostenko O., Grigoryeva O., Sotta P., Rogalsky S., Smertenko P., Fainleib A., Grande D. Structure–Property Relationships in Nanocomposites Based on Cyanate Ester Resins and 1-Heptyl Pyridinium Tetrafluoroborate Ionic Liquid. *Polymer*, **148C**, 14-26 (2018).
14. Vashchuk A., Fainleib A., Starostenko O., Grande D. Application of ionic liquids in thermosetting polymers: epoxy and cyanate resins. *eXPRESS Polym. Lett.*, **12**(10), 898-917 (2018).
15. Fainleib A., Vashchuk A., Starostenko O., Grigoryeva O., Rogalsky S., Nguyen T.-T.-T., Grande D. Nanoporous Polymer Films of Cyanate Ester Resins Designed by Using Ionic Liquids as Porogens. *Nanoscale Res. Lett.*, **12**, 126 (p. 1-9) (2017).
16. Gusakova K., Fainleib A., Espuche E., Grigoryeva O., Starostenko O., Gouanve F., Boiteux G., Saiter J.-M., Grande D. Nanoporous Cyanate Ester Resins: Structure-Gas Transport Property Relationships. *Nanoscale Res. Lett.*, **12**, 305 (p. 1-9) (2017).
17. Bershtein V., Fainleib A., Kirilenko D., Yakushev P., Gusakova K., Lavrenyuk N., Ryzhov V. Dynamics and properties of high performance amorphous polymer subnanocomposites with ultralow silica content and quasi-regular structure. *Polymer*, **103**, 36-40 (2016).
18. Bershtein V., Fainleib A., Gusakova K., Kirilenko D., Yakushev P., Egorova L., Lavrenyuk N., Ryzhov V. Silica subnanometer-sized nodes, nanoclusters and aggregates in Cyanate Ester Resin-based networks: structure and properties of hybrid subnano- and nanocomposites. *Eur. Polym. J.*, **85C**, 375-389 (2016).
19. Bershtein V., Fainleib A., Yakushev P., Egorova L., Grigoryeva O., Ryzhov V., Starostenko O. Thermostable cyanate ester resins and POSS-containing nanocomposites: influence of matrix chemical structure on their properties. *Polym. Adv. Tech.*, **27**(3), 339–349 (2016).
20. Fainleib A., Grigoryeva O., Starostenko O., Vashchuk A., Rogalsky S., Grande D. Acceleration effect of ionic liquids on polycyclotrimerization of dicyanate esters. *eXPRESS Polym. Lett.*, **10**(9), 722–729 (2016).
21. Baikova L., Pesina T., Sakseyev D., Fainleib A., Bershtein V. Hybrid Cyanate Ester Resin-based nanocomposites: increased indentation size effect due to anomalous composition of micron subsurface layer. *Polym. Test.*, **53**, 15-18 (2016).
22. Fainleib A.M., Gusakova K., Grigoryeva O., Starostenko O., Grande D. Synthesis, morphology, and thermal stability of nanoporous cyanate ester resins obtained upon controlled monomer conversion. *Eur. Polym. J.*, **73**, 94–104 (2015).
23. Gusakova K., Saiter J.-M., Grigoryeva O., Gouanve F., Fainleib A., Starostenko O., Grande D. Annealing Behavior and Thermal Stability of Nanoporous Polymer Films based on High-Performance Cyanate Ester Resins. *Polym. Degr. Stab.*, **120**, 402–409 (2015).
24. Bershtein V., Fainleib A., Egorova L., Gusakova K., Grigoryeva O., Kirilenko D., Konnikov S., Ryzhov V., Yakushev P., Lavrenyuk N. The Impact of Ultra-low Amounts of Amino-Modified MMT on Dynamics and Properties of Densely Cross-linked Cyanate Ester Resins. *Nanoscale Res. Lett.* **10**, 165 (p. 1-15) (2015).
25. Bershtein V., Fainleib A., Egorova L., Grigoryeva O., Kirilenko D., Konnikov S., Ryzhov V., Starostenko O., Yakushev P., Yagovkina M., Saiter J.-M. The Impact of Ultra-low Amounts of Introduced Reactive POSS Nanoparticles on Structure, Dynamics and Properties of Densely Cross-linked Cyanate Ester Resins. *Eur. Polym. J.*, **67**, 128-142 (2015).
26. Grande D., Grigoryeva O., Fainleib A., Gusakova K. Novel mesoporous high-performance films derived from polycyanurate networks containing high-boiling temperature liquids. *Eur. Polym. J.*, **49**, 2162-2171 (2013).
27. Grande D., Purikova O., Grigoryeva O., Fainleib A., Bismarck A. Facile Route to Polycyanurate-Based Polymerized High Internal Phase Emulsions through the Formation of In-Situ Sequential IPNs. *Polym. Mat. Sci. Eng.*, **108**, 32-33 (2013).

28. Gusakova K., Starostenko O., Grigoryeva O., Fainleib A., Youssef B., Saiter J.-M., Boiteux G., Grande D. Structure, morphology, and thermal stability of mesoporous films based on high-performance polycyanurates. *Polym. Mat. Sci. Eng.*, **108**, 34-35 (2013).

### List of books, book chapters and review articles published

#### Books

1. *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*, A. Fainleib, editor. Nova Science Publishers, New York, 2010.
2. *Recent developments in polymer recycling*. A. Fainleib, O. Grigoryeva, editors. Transworld Research Network, Kerala, India, 2011.
3. Fainleib A., Grigoryeva O., Starostenko O., Gusakova K., Grande D. “Thermostable nanoporous polycyanurates”, *Akademperiodyka*, Kyiv, 2023.

#### Book chapters

1. Grigoryeva O., Fainleib A., Sergeeva L.M. Thermoplastic polyurethane elastomers in interpenetrating polymer networks, in: *„Handbook of Condensation Thermoplastic Elastomers”*, S. Fakirov, editor, WILEY-VCH, Germany, 2005, Chapter 12, p. 325-354.
2. Fainleib A., Grigoryeva O., Pissis P. Modification of Polycyanurates by Polyethers, Polyesters and Polyurethanes. Hybrid and Interpenetrating Polymer Networks, in *“Chemical and Biological Kinetics. New horizons”*, Volume 1 “Chemical Kinetics”, E.B. Burlakova, A.E. Shilov, S.D. Varfolomeev, G.E. Zaikov, editors. VSP International Publ., Leiden-Boston, 2005, p. 405-437.
3. Fainleib A., Grigoryeva O., Pissis P. Modification of Polycyanurates by Polyethers, Polyesters and Polyurethanes. Hybrid and Interpenetrating Polymer Networks, in *“Focus on Natural and Synthetic Polymer Science”*, C. Vasile, G.E. Zaikov, editors. NOVA SCIENCE PUBLISHERS, New York, 2006, chapter 3, p. 49-84.
4. Fainleib A., Grigoryeva O., Pissis P. Modification of Polycyanurates by Polyethers, Polyesters and Polyurethanes. Hybrid and Interpenetrating Polymer Networks, in *“Synthesis and Properties of Low- and High-Molecular Compounds”*, G.E. Zaikov, I.V. Savenkova, K. Gumargalieva, editors. NOVA SCIENCE PUBLISHERS, New York, 2006, p. 101-136.
5. Fainleib A., Grigoryeva O., Martínez-Barrera G. Radiation induced functionalization of polyethylene and ground tire rubber for their reactive compatibilization in thermoplastic elastomers, in *“Gamma Radiation Effects on Polymeric Materials and its Applications”*, C. E. Barrera-Diaz, G. Martinez-Barrera, editors. RESEARCH SIGNPOST, Kerala, India, 2009, p. 63-85.
6. Fainleib A. Synthesis, thermodynamics, kinetic peculiarities and structure-properties relationships for polycyanurate-polyurethane semi-interpenetrating polymer networks (semi-IPNs), in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 1, p.1-42.
7. Fainleib A., Saiter J.-M., Grigoryeva O., Youssef B. Polyurethane-polycyanurate full sequential interpenetrating polymer networks (seq-IPNs). Synthesis, structure, properties, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 2, p. 43-80.
8. Fainleib A. Polycyanurate hybrid networks and semi-IPNs filled with carbon fibers. Synthesis and structure-properties relationships for the relative composites, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. NOVA Nova Science Publishers, New York, 2010. Chapter 3, p. 81-112.
9. Bartolotta A., Di Marco G., Tripodo G., Fainleib A. Local and cooperative molecular mobility in semi- and full- interpenetrating polymer networks, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 4, p. 113-142.
10. Bartolotta A., Carini G., D'Angelo G., Fainleib. A. Fragility and anharmonicity in interpenetrating polymer networks, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 5, p. 143-160.
11. Grigoryeva O., Fainleib A., Saiter J.-M., Grande D. Modification of polycyanurates by polyethers and polyesters, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 6, p. 161-194.
12. Bershtein V., Fainleib A., Yakushev P. Polycyanurate-based hybrid networks and nanocomposites: structure-glass transition dynamics-dynamic heterogeneity-properties relationships, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 7, p. 195-246.

13. Polycarpou P., Kriptomou S., Maroulas P., Fainleib A. Dielectric studies of chain dynamics in polycyanurate hybrid networks and nanocomposites, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 8, p. 247-296.
14. Grande D., Grigoryeva O., Fainleib A. Nanoporous polycyanurates, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 9, p. 297-320.
15. Fainleib A., Grigoryeva O., Youssef B., Saiter J.-M., Bismarck A. Modification of polycyanurate network by reactive rubbers with hydrazide, acylhydrazone and isocyanate terminal groups, in *“Thermostable polycyanurates. Synthesis, modification, structure and properties”*. Nova Science Publishers, New York, 2010. Chapter 10, p. 321-352.
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