

NOMINATION FOR an IFToMM AWARD

1	Name of Honor or Award:	The Award of Merit
2	Date submitted:	July 07, 2014
3	Full Name of Nominee:	Prof. Faydor L. LITVIN
	Nominee's Title/Position:	Professor, DSc in Engineering
	Nominee's Address:	8637 N. Avers Ave, Skokie 60076 Illinois, US
	Nominee's Citizenship:	USA
4	Citation: (35-40 word summary of nominee's qualifications)	In addition to his outstanding scientific activity as documented by significant publications, Prof. Litvin has contributed much to promoting the science on machines and mechanisms. He prepared about 100 PhD graduates, he is the author of more than 300 publications and 20 inventions.
5	Nominator(s): (Names, IFToMM affiliation/ connection of the person or persons suggesting the nomination)	Prof. Daizhong Su, Chair of IFToMM TC for Gearing and Transmissions (2012-2015), Advanced Design and Manufacturing Engineering Centre, Maudslay Building, Nottingham Trent University, Burton Street, Nottingham, NG1 4BU, UK Daizhong.su@ntu.ac.uk
6	References: (Names and addresses of the individuals – at least three – acquainted with the nominee's qualifications and requirements of the award who have written the attached letters. Please be advised that the Executive Council will not consider more than five reference letters. It is the responsibility of the nominator to obtain all references and to append them to the nomination.)	1. Prof. Veniamin Goldfarb IFToMM Vice-President (2012-2015) Head of Institute of Mechanics, Kalashnikov ISTU, Izhevsk, RUSSIA veniamingoldfarb@yahoo.com 2. Prof.hc.Dr.Eng. Aizoh Kubo Ex-Chairman of IFToMM TC for Gearing and Transmissions, 1994-1997 General manager of the Research Institute for Applied Sciences, Dept.Mech.Eng., Kyoto University, JAPAN aizokubo@hera.eonet.ne.jp 3. Prof. Alfonso Fuentes Professor and Head of the Department of Mechanical Engineering at the Polytechnic University of Cartagena Dr. Fleming, s/n, 30202 Cartagena, SPAIN alfonso.fuentes@upct.es 4. PhD Yevsey Gutman Principal Staff Scientist MTS Systems Corporation 14000 Technology Drive Eden Prairie, MN, 55344-2290, USA Yevsey.Gutman@mts.com

7. QUALIFICATIONS

Prof. Faydor L. Litvin is the founder of the modern theory of gearing, the promoter of novel ideas and achievements of the science on machines and mechanisms. His first edition of the fundamental monograph “Theory and Practice of Gearing”, which was later translated into many languages, became the main source of knowledge on methods of analysis and synthesis of gears. Many generations of gear scientists and practical experts grew up on this monograph.

Professor Litvin has supervised the research of a total of 100 Ph.D. students (50 of them were in Russia prior to 1978), 42 of them graduated from UIC, becoming the professor that more students have graduated in the history of the Department of Mechanical Engineering of UIC. His graduated students have received prominent research and teaching positions in USA, Australia, Bulgaria, China, Taiwan and Russia. He has also trained and supervised many visiting scholars from Italy and Spain, having changed definitively his professional lives. Prof. Litvin’s teaching experience includes analysis and kinematics of mechanisms, theory of gearing and applications, advanced theory of gearing, dynamics of machinery, analysis and design of manipulators, and special topics in advanced kinematics and dynamics of mechanisms.

Prof. F. Litvin is a respected and renowned authority in kinematics and theory of gearing. He has been a pioneer in considering transmission errors in the design of gear drives, and proposing methods to absorb them when errors of alignment or manufacturing occur. Nowadays, it is considered one of the main key factors when designing low noise and vibration gear drives.

One of Professor Litvin’s goals was to pay tribute to those that in one way or another have contributed to the development of the theory of gearing. A comprehensive history of the development of the theory of gearing through biographies of major contributors to the field was published. Professor Litvin’s unique historical perspective was achieved by assiduous research into the lives of courageous, talented, and creative men who made significant contributions to the field of gearing. The meeting room of the Gear Research Center has been surrounded by the portraits of those that contributed to the theory of gearing as a way to make them participant of the discussions that were held in that room.

In the first years after creation of IFToMM Prof. F. Litvin was taking an active part in development of directions of activities, in organizing World Congresses. His scientific activity influenced a lot on creation of the Technical Committee for Gearing and Transmissions. His numerous PhD students and followers became authoritative scientists themselves and at present time they are active IFToMM members in different PCs, TCs and MOs.

8. PUBLICATIONS/PATENTS

Professor Litvin is author of nearly 300 publications in referred journals and prestigious gear conferences. The most fundamental publications include the following books published in the USA:

- Theory of Gearing, NASA Reference Publication 1212, 1989.
- Gear Geometry and Applied Theory, Prentice Hall, 1994, ISBN: 0-13-211095.
- Development of Gear Technology and Theory of Gearing, NASA Reference Publication 1406, 1998.
- Gear Geometry and Applied Theory, 2nd Edition, Cambridge University Press, 2004.
- Noncircular Gears: Design and Generation, Cambridge University Press, 2009.

He is holder of 26 inventions (3 of them are U.S. Patents). His patent, Apparatus and Method for Precision Grinding Face Gear, has singularly provided a way to reduce the weight of helicopter transmissions by 40 percent, promoting fuel savings, reduced emissions and lower seat prices. The grinding method invented by Professor Litvin has for the first time enabled a way to grind hardened face gears that will provide the same level of safety as spiral bevel gears. His efforts have opened the

way for the use of these low cost, high capacity gears in applications that will significantly benefit the aerospace, automotive and shipping industries.

9. BRIEF BIOGRAPHY

Professor Faydor L. Litvin was born in year 1914 in Russia.

HIGHER EDUCATION

1937 Master degree (Doctor of Technical Sciences), Saint Petersburg Technical Institute, Russia

UNIVERSITY ACTIVITY AND SCIENTIFIC RESEARCH EXPERIENCE

1947-64 St. Petersburg State Polytechnic University, Full Professor.

1964-78 St. Petersburg Institute of Precision Mechanics and Optics, Full Professor and Head of the department of mechanisms theory and machine elements.

1979-2000 University of Illinois at Chicago (USA), Professor of mechanical engineering and director of the Gear Research Center.

2000-2009 University of Illinois at Chicago (USA), Engineering Distinguished Professor Emeritus.

He has been an ASME Fellow since 1992 and member of the editorial advisory board of the Journal Mechanism and Machine Theory, as well as associate editor of Computer Methods in Applied Mechanics and Engineering, 1995-2000.

AWARDS

In his American period of research work, Professor Litvin has been granted the following awards:

- Best Paper Award, 1990 ASME Mechanism Conference.
- The Allan S. Hall Award of the Applied Mechanism and Robotics Conference, 1991, for contribution to advancing the Science of Mechanisms and Robotics.
- Honorable Dr. Degree from Miskolc University, Hungary, 1999.
- UIC Inventor of the Year, 2001.
- 12 NASA tech-brief awards in the period from 1983 to 2001.
- The Thomas Bernard Hall Prize, granted by the Institute of Mechanical Engineers, UK, 2001.
- ASME Thomas A. Edison Patent Award, 2004.
- The University of Bologna Sigilium Magnun Award for the pioneering studies and outstanding achievements of his research work in the theory of mechanism and advanced gear technology, nevertheless for his dedication to teaching and training generations of students and scholars, 2009.