



Curriculum Vitae

Name : Karam Youssef Maalawi
Gender : Male
Marital Status : Married
Date & Place of Birth : January 12, 1952, Cairo, Egypt.
Nationality : Egyptian
Occupation : Professor Emeritus of Aeronautics and Mechanics.
PhD, Aerospace Engineering

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: https://www.researchgate.net/profile/Karam_Maalawi

Experience

- Research work: Theoretical and applied mechanics – Optimum design
- Design and manufacture of wind turbines structures.
- Teaching experience: Mechanics and dynamics of aircraft structures – Composite materials – Optimum design-Wind energy.

Research Projects

- 1- Design and manufacture of wind turbine components. (1978 -1982)
- 2- Special studies on the design of composite rotor blades. (1998 - 2001)
- 3- Aerospace engineering technology: Applications. (1998 - 2001)
- 4- Advanced & new materials technology. (2001 - 2002)
- 5- Optimization of heat transfer by conduction. (2002 - 2005)
- 6- Optimal design of wind turbine structures. (2007 - 2010)
- 7- Design and manufacture of a small-scale wind generator. (2010 - 2013)
- 8- Implementation of optimized hybrid renewable energy systems for building green sustainable village. (2014 – 2017)
- 9- Installation, operation and testing of wind generator at NRC site in 6 October city. (2016 - 2019)
- 10- Renewable Energy Industrialization for Egypt’s Sustainable Development. (2017 - 2020)

Cultural, educational and professional memberships:

- a- Engineering Syndicate membership # 09/5062.
- b- Society of Mechanical Engineering, membership # 2686.
- c- Egyptian Society of Engineers # 3491.
- d- Society of Scientific Research, membership # 562.

e- Membership of scientific & technical committees:

- Accreditation and quality control committee, NRC.
- Advanced computer methods in engineering Unit– Engineering Division, NRC.
- Energy management committee of the Egyptian Organization for Standardization and Quality.
- Ship Building Committee of the Egyptian Organization for Standardization and Quality.

Editorial board, World Academy of Science, Engineering and Technology (www.waset.org).
International Scientific Committee and Editorial Board on Aerospace & Mechanical Engineering
<http://89.19.23.202/Committees/Aerospace-and-Mechanical-Engineering>

Reviewer: (<https://publons.com/author/1544962/karam-y-maalawi#profile>)

- 1- International Journal of Aerospace Engineering.
- 2- Engineering Structures.
- 3- Journal of Sound and Vibration.
- 4- Renewable and Sustainable Energy Reviews.
- 5- Ocean Engineering.
- 6- International Journal of structural Dynamic and Stability.
- 7- The Egyptian Journal of Remote Sensing and Space Sciences.
- 8- Journal of International Society for Science and Engineering.

Books:

- 1- Design Optimization of Wind Energy Conversion Systems with Applications, <https://www.intechopen.com/books/design-optimization-of-wind-energy-conversion-systems-with-applications>, 2020.
- 2- Modeling, Simulation and Optimization of Wind Farms and Hybrid Systems, <https://www.intechopen.com/books/modeling-simulation-and-optimization-of-wind-farms-and-hybrid-systems>, 2020
- 3- Optimum Composite Structures, <http://dx.doi.org/10.5772/intechopen.74696>, Edited by Karam Y. Maalawi, First published in London, United Kingdom, 2019 by IntechOpen, Print ISBN 978-1-78985-067-3, https://mts.intechopen.com/storage/books/7277/authors_book/authors_book.pdf, 2019.
- 4- A Model for Dynamic Optimization of Pitch-Regulated Wind Turbines with Application, Advances in Wind Power, Rupp Carriveau (Ed.), ISBN: 978-953-51-0863-4, InTech, DOI: 10.5772/53347, <http://www.intechopen.com/books/advances-in-wind-power>, 2012.
- 5- Stability, Dynamic and Aeroelastic Optimization of Functionally Graded Composite Structures, Advances in Computational Stability Analysis, Safa Bozkurt Coskun (Ed.), ISBN: 978-953-51-0673-9, InTech, DOI: 10.5772/45878, <http://www.intechopen.com/books/advances-in-computational-stability-analysis>, 2012.
- 6- Special Issues on Design Optimization of Wind Turbine Structures, Wind Turbines, Ibrahim Al-Bahadly (Ed.), ISBN: 978-953-307-221-0, InTech, April 2011, Available from: <http://www.intechopen.com/articles/show/title/special-issues-on-design-optimization-of-wind-turbine-structuresm> 2011.

Consultant : (<https://wwlifetimeachievement.com/2018/08/13/karam-maalawi/>)

Teaching Experience:

- 1- Aircraft design & maintenance (Egyptian Air-force, 1974-1976).
- 2- Analysis & Design of metal structures (Faculty of Fine Arts, Zamalek, Cairo, Egypt, 1977-1978).
- 3- Mechanics & Dynamics (University of Minnesota, USA, 1984 – 1985).
- 4- Training Courses taught at The Arab Organization for Industrialization [Wind Energy Technology]
- 5- Lectures & Courses taught at NRC – Training Center:
 - A- Wind Energy.
 - B- Structural Mechanics & composite materials.
 - D- Optimum design techniques.

Scientific Missions:

- Advanced study program in aerospace engineering (University of Minnesota, U.S.A. July 1983-1985).
- Aeroelastic Design of Functionally Graded Composite Wings - Virginia Tech, Department of Engineering Science and Mechanics, September 2006 to March 2007, VA, USA.

Awards:

- National Research Center Award in Engineering Sciences, Year 2005.
- National Research Center Award in Engineering Sciences, Year 2011.

- Albert Nelson Marquis Lifetime Achievement Award by Marquis Who's Who, 2018
<https://www.24-7pressrelease.com/press-release/457041/karam-maalawi-presented-with-the-albert-nelson-marquis-lifetime-achievement-award-by-marquis-whos-who>

Supervision of M.Sc & Ph.D thesis

- 1- Hassan A. Ismail, "Optimum Frequency Design of Conical Shell Structures", M.Sc. Thesis, Department of Aerospace Engineering, Cairo University, January 2007.
- 2- Fawzy M. "Effect of Cutting Parameters and Work-piece Material on Tool Life", M.Sc. Thesis, Department of Production Engineering, Cairo University, January, 2008.
- 3- Medhat El Sheikh, "A Model for Design Optimization of a Trainer Wing," M.Sc. Thesis, Department of Aerospace Engineering, Cairo University, July 2009.
- 4- El Gohary A., "Optimal aeroelastic tailoring of functionally graded composite wings," M.Sc. Thesis, Department of Aerospace Engineering, Cairo University, July 2014.
- 5- Mahran M., "Tailoring of composite swept wings for enhancing aeroelastic characteristics," M.Sc. Thesis, Department of Aerospace Engineering, Cairo University, Jan. 2015.
- 6- Mai F.Mahmoud, "Reliability of wind turbine selection for a specific site," M.Sc. Thesis, Department of Mechanical Engineering, Cairo University, May 2015.
- 7- Fawzy M. "Optimum Design of Power transmission Shafts using Material Grading Concept", Ph.D. Thesis, Department of Production Engineering, Cairo University, Oct. 2015.
- 8- Edward, Gerguis, "Dynamic optimization of functionally graded wind turbine blades" Ph.D Thesis, Department of Mechanical Engineering, Faculty of Engineering, Shoubra , October 2016.
- 9- Hamed .S. Esmat, "Aeroelastic modeling and tailoring of rotating composite blades for enhancing helicopters and wind turbines performance and flying qualities," PhD. Thesis, University of Delft, Netherlands.

Publications (<https://orcid.org/0000-0003-3649-5511>)

- 1- M.S. Rashad & K.Y. Maalawi. A network system analysis of framed structures under static load. *Proceedings of 2nd Conference of Mechanical Power Engineering*, Ain Shames University, Faculty of Engineering, Cairo, Egypt, Sept 1978.
- 2- K.Y. Maalawi and W.H. Warner, "Global optimization of multi-segment rods in axial motion", *Report-AEM 8880, Plan B Project, Department of Aerospace Engineering and Mechanics*, University of Minnesota, USA, September 1984.
- 3- H.M. Negm & K.Y. Maalawi. A global objective function for aircraft design optimization. *Scientific Engineering Bulletin*, Faculty of Engineering, Cairo University, No. (4), 1986.
- 4- H.M. Negm & K.Y. Maalawi. Wing design optimization. *The 21st annual conference in statistics, computer science and operations research*, vol.(4) Operation Research, Cairo University, December 1986.
- 5- K.Y. Maalawi. Optimal mass and frequency design of rods in longitudinal vibrations. *The 6th Conference on Theoretical and Applied Mechanics*, Academy of scientific Research and Technology, Cairo, Egypt, March 3-4, 1999.
- 6- H.M. Negm & K.Y. Maalawi. Structural design optimization of wind turbine towers. *Journal of Computers & Structures*, vol.74, No. 6, February 2000, p. 649-666.
- 7- K.Y. Maalawi & M.T. Badawy. A direct method for evaluating performance of horizontal axis wind turbines, *Journal of Renewable & Sustainable Energy Reviews*, Vol.5 (2), June 2001, 175-190.
- 8- K.Y. Maalawi & H.M. Negm, Frequency Optimization of a rotating Wind Turbine Blade. *ISES 2001 Solar World Congress*, Adelaide, Australia, November 2001.
- 9- K.Y. Maalawi & M. Ziada, Optimization of Pipelines containing Fluid against Divergence, *14th Australasian Fluid Mechanics Conference*, Adelaide University, Adelaide, Australia 10-14 December 2001.

- 10- K.Y. Maalawi & M. Ziada. On the static instability of flexible pipes conveying fluid. *Journal of Fluids & Structures*, Vol.16, No. 5, pp.685-690, September 2002.
- 11- K.Y. Maalawi & H.M. Negm. Optimal frequency design of wind turbine blades. *Journal of Wind Engineering & Industrial Aerodynamics*, Vol.90, No.8, pp.961-986, August 2002.
- 12- K.Y. Maalawi & N.M. El-Chazly, Global Optimization of Multi-element Beam-Type Structures, *The Second International Conference on Advances in Structural Engineering and Mechanics*, ASEM'02, Busan, South Korea, August 21-23, 2002.
- 13- K.Y. Maalawi. Buckling optimization of flexible columns. *International Journal of Solids and Structures*, Vol.39, No.23, pp. 5865-5876, November 2002.
- 14- K.Y. Maalawi. Maximum stability design of beam-columns with piecewise uniform sections. *The 7th Conference on Theoretical and Applied Mechanics*, Academy of scientific Research and Technology, Cairo, Egypt, March 11-12, 2003.
- 15- K.Y. Maalawi & M.A. Badr. A practical approach for selecting optimum wind rotors. *International Journal of Renewable Energy*, vol.28, No.5, pp.803-822, April 2003.
- 16- K.Y. Maalawi & M.A. Badr. Explicit Design Formulas of Efficient Wind Generators. *International Conference on Power Engineering*, ICOPE-03, November 9-13, 2003, Kobe, Japan.
- 17- K.Y. Maalawi & A. M. Abouel Fotouh. Stability of Elastically Restrained Pipes Containing Fluids. *The 1st International Conference On Green & Advanced Engineering Technologies*, Engineering Research Division, National Research Centre, 4-6 January, 2004, Cairo, Egypt.
- 18- K.Y. Maalawi & M.A. Badr. Efficient Aerodynamic Design of Wind Turbine Blades. *The 1st International Conference On Green & Advanced Engineering Technologies*, Engineering Research Division, National Research Centre, 4-6 January, 2004, Cairo, Egypt.
- 19- K.Y. Maalawi & M.A. Badr. Key-Design Equations of Electricity-generating Wind Turbines. *Journal of the Egyptian Society of Engineers*, Vol.43, No.1, March 2004.
- 20- K.Y. Maalawi & M. A. Ziada. Design of Pipelines for Maximum Critical Flow Velocity. *Journal of Engineering and Applied Science*, Faculty of Engineering, Cairo University, Vol. 51, No.2, April 2004.
- 21- K.Y. Maalawi & A. M. Abouel Fotouh. Design of Thin Pipes against Flow-Induced Flutter. *Journal of the Egyptian Society of Engineers*, Vol. 43, No.2, June 2004.
- 22- K.Y. Maalawi & N. M. El-Chazly. Practical Shapes of the Strongest Columns. *Journal of Engineering and Applied Science*, Faculty of Engineering, Cairo University, Vol. 51, No. 3, June 2004.
- 23- K.Y. Maalawi & N. M. El-Chazly. On the Optimal Design of Beams in Bending Vibration. *Journal of Engineering and Applied Science*, Faculty of Engineering, Cairo University, Vol. 52, No. 5, October 2005.
- 24- K.Y. Maalawi & M.A. Badr. A Note on Optimum Design of Mechanical Elements and Structures. *The 2nd International Conference on Advances in Engineering Sciences & Technologies*, Engineering Research Division, National Research Center, Cairo, Egypt, 12-14 November 2005.
- 25- K.Y. Maalawi & A. M. Abouel Fotouh. Investigation of Instability of Flexible Pipes Transporting Fluids. *Journal of Engineering and Applied Science*, Faculty of Engineering, Cairo University, Vol. 52, No. 6, December 2005.
- 26- K.Y. Maalawi. Torsional Dynamic Optimization of Wind Power Generators. 12th *International Conference On Applied Mechanics and Mechanical Engineering*, Military Technical College, Cairo, Egypt, May 16-18, 2006.
- 27- K.Y. Maalawi. Frequency Placement of a Wind Rotor/Tower Structure in Free Yaw. *World Renewable Energy Congress WREC-IX*, Florence, Italy, 19-25 August 2006.
- 28- Hassan A. I., Maalawi K.Y. & Negm H. M. Frequency Optimization of Conical Shells under Mass Equality Constraint. *Journal of Applied Sciences Research*, Vol.2, No. 11, pp.821-830, November 2006.
- 29- Karam Y. Maalawi. A Model for Yawing Dynamic Optimization of a Wind Turbine Structure. *International Journal of Mechanical Sciences* (49), pp. 1130-1138, Oct. 2007.

- 30- Librescu L & Maalawi K., "Material grading for improved aeroelastic stability in composite wings", *Journal of Mechanics of Materials and Structures*, 2(7), pp.1381-1394. Sep. 2007.
- 31- Karam Y. Maalawi,"Optimal buckling design of anisotropic rings/long cylinders under external pressure," *Journal of Mechanics of Materials and Structures*, 3(4), 775-793, April 2008.
- 32- Karam Y. Maalawi and Mervat A. Badr, "Optimal frequency design of a variable pitch wind turbine blade," *World Renewable Energy Congress X and Exhibition*, Glasgow-Scotland, United Kingdom, paper WE7, 19-25, pp. 2224-2229, July 2008.
- 33- Librescu L. and Maalawi K.Y., "Aeroelastic design optimization of thin-walled subsonic wings against divergence," *Thin-Walled Structures*, Vol.47, pp.89-97, Jan.2009.
- 34- Maalawi K.Y. and Mervat A. Badr, "Design optimization of mechanical elements and structures: A review with application," *Journal of Applied Sciences Research*, Vol. 5, No.2, pp. 221-231, March 2009.
- 35- Maalawi K.Y., Negm H.M., and El Sheikh M.M., "Aerodynamic/Structural Optimization of a Training Aircraft Wing," *13th International Conference on Aerospace Sciences & Aviation Technology (ASAT-13)*, Military Technical College, Cairo, Egypt, May 26-28, 2009.
- 36- Karam Y. Maalawi, "Buckling optimization of radially-graded, thin-walled, long cylinders under external pressure," *International Conference of Mechanical and Industrial Engineering ICMIE09*, Vol. 57, pp.518-525, Amsterdam, The Netherlands, September 23-25, 2009.
- 37- Karam Y. Maalawi, "Optimization of elastic columns using axial grading concept," *Engineering Structures*, Vol. 31, pp.2922-2929, 2009.
- 38- K.Y. Maalawi, "A Generalized formulation for radially graded composite cylinders/rings with maximized stability limits," *Journal of Engineering and Applied Science, Faculty of Engineering, Cairo University*, Vol.57, No.2, April 2010.
- 39- K.Y. Maalawi, "Frequency Optimization of functionally graded bars in axial motion," *1^{4th} International Conference On Applied Mechanics and Mechanical Engineering*, Military Technical College, Cairo, Egypt, May 25-27, 2010.
- 40- Karam Y. Maalawi and Mervat A. Badr, "Frequency optimization of a wind turbine blade in pitching motion," *Journal of Power and Energy, Proceedings of the Institution of Mechanical Engineers, Part A*, JPE907, Vol. 224, pp. 545-554, Jun 2010.
- 41- T.M. El-Hossainy, A.A. El Zoghby, M.A. Badr, K.Y. Maalawi, M.F. Nasr, "Cutting parameter optimization when machining different materials," *Materials and manufacturing Processes*, 25 (10), pp.1101-1114, December 2010
- 42- Karam Y. Maalawi, "Use of material grading for enhanced buckling design of thin-walled composite rings/long cylinders under external pressure," *Composite Structures*, 93(2), pp-351-359, 2011.
- 43- Karam Y. Maalawi,"Functionally graded bars with enhanced dynamic performance," *Journal of Mechanics of Materials and Structures*, Vol. 6, No.1, pp. 377-393, 2011.
- 44- Karam Maalawi. Special Issues on Design Optimization of Wind Turbine Structures, Wind Turbines, Ibrahim Al-Bahadly (Ed.), ISBN: 978-953-307-221-0, InTech, April 2011, Available from: <http://www.intechopen.com/articles/show/title/special-issues-on-design-optimization-of-wind-turbine-structures>.
- 45- Karam Maalawi, "Functionally graded material blades with enhanced aeroelastic performance," *International Workshop on Advanced Materials for Wind Turbine blades, MatWind2011, CAM, The British University in Egypt*, May 15-16, 2011.
- 46- Karam Y. Maalawi & Hanan E.M. EL-sayed, "Stability optimization of functionally graded pipes conveying fluid," *Proceedings of World Academy of science, Engineering and Technology*, vol. 79, pp. 374-379, France, Paris, July 2011.
- 47- Hassanein M.D. A. and Maalawi K., "Manufacturing a yaw controlled small-scale wind turbines in Egypt," *8th International Conference on Electrical Engineering, ICEENG-2012, Military Technical College in Cairo, Egypt*, May 29-31.
- 48- Karam Maalawi, "Stability, Dynamic and Aeroelastic Optimization of Functionally Graded Composite Structures," *Advances in Computational Stability Analysis*, Safa Bozkurt Coskun (Ed.), ISBN: 978-953-51-0673-9, InTech, DOI: 10.5772/45878, August, 2012, <http://www.intechopen.com/books/advances-in-computational-stability-analysis>

- 49- Karam Y. Maalawi & Mohamed EL-Anwar, "A Model for Wind Turbine Blade with Enhanced Torsional Stability," Proceedings of the 1st WSEAS International Conference on Energy and Environment Technologies and Equipment (EEETE'12), ISBN: 978-1-61804-122-7, Tomas Bata University in Zlin, Czech Republic, September 20-22, 2012, pp. 27-32,
<http://www.wseas.us/e-library/conferences/2012/Zlin/ENAGROBIO/ENAGROBIO-00.pdf>.
- 50- Karam Y. Maalawi, "A Model for Dynamic Optimization of Pitch-Regulated Wind Turbines with Application," Advances in Wind Power, Rupp Carriveau (Ed.), ISBN: 978-953-51-0863-4, InTech, DOI: 10.5772/53347, November 2012.
<http://www.intechopen.com/books/advances-in-wind-power>.
- 51- A. EL-Gohery, K.Y. Maalawi, H.M.Negm, "Stability optimization of thin-walled functionally graded beams," 15th International Conference on Aerospace Sciences & Aviation Technology, ASAT-15-Military Technical College, Cairo, Egypt, May 28 - 30, 2013.
- 52- Karam Maalawi, "Frequency optimization of a wind turbine blade," 3rd Egyptian Tunisian Workshop on New and Renewable Energies, National Research Center, Cairo, Egypt, 11-12 June, 2013.
- 53- A. M. EL-Gohery, K.Y. Maalawi, H.M.Negm, "Aeroelastic optimization of functionally graded wings," 16th International Conference On Applied Mechanics and Mechanical Engineering, AMME-SM-29, Military Technical College, Cairo, Egypt, May 27-29, 2014.
- 54- Karam Maalawi, "Global optimization of thin-walled composite beams." 1st International Conference on Mechanics of Composites, MechComp2014, Stony Brook University, NY, 8-12 June, 2014.
- 55- Mai F.M. Ayoub, M.O.A. Mokhtar, K.Y. Maalawi, M.A.A. Mohamed, "An Approach to Asses the Reliability of Wind Turbines," 20th Conference of the Society of Mechanical Engineers, 14-15 March 2015, Cairo, Egypt.
- 56- Maalawi Karam Y., "Optimization of functionally graded plate wings against divergence," The 18th International Conference on Composite Structures, Lisbon, Portugal, 15-18 June, 2015.
- 57- Mahran M., Negm H., Maalawi K., El Sabagh A., "Aeroelastic analysis of composite plate swept wings using the finite element method," The 18th International Conference on Composite Structures, Lisbon, Portugal, 15-18 June, 2015.
- 58- G.E. Beshay, K.Y. Maalawi, S.M. Abdrabbo and T.A. Khalifa, " Dynamic optimization of thin-walled composite blades of wind turbines," World Applied Sciences Journal 33(3): 525-535, 2015.
- 59- M.F. Nasr, A.A. El-Zoghby, K.Y. Maalawi, B.S. Azzam and M.A. Badr, " Torsional buckling optimization of composite drive shafts," World Applied Sciences Journal 33(3): 517-524, 2015.
- 60- Karam Y. Maalawi, "A model for aero-elastic optimization of forward-swept composite wings," 3rd International Conference and Exhibition on Mechanical & Aerospace Engineering, October 05-07, 2015 San Francisco, USA, <http://dx.doi.org/10.4172/2168-9792.C1.011>.
- 61- K.Y. Maalawi, A. M. Abouel-Fotouh, M. El Bayoumi, Khaled Ahmed Ali Yehia, "Design of Composite Pipes Conveying Fluid for Improved Stability Characteristics," International Journal of Applied Engineering Research ISSN 0973-4562, Vol. 11, No. 12, pp7633-7639, 2016.
- 62- Mohamed A. Mahran, Hani M. Negm, Karam Y. Maalawi, Adel M. El Sabagh, "Aeroelastic analysis and optimization of composite plate wings," The 17th European Conference on Composite Materials, Munich, Germany, 26-30 June, 2016.
- 63- N.M. Khattab, M.A. Badr, K.Y. Maalawi, E.T. El Shenawy, H.H. El Ghetany and N.M. Ibrahim, "Hybrid Renewable Energy System for Water Desalination: A Case Study for Small Green House Hydroponic Cultivation in Egypt," APPN Journal of Engineering and Application Sciences, Vol. 11, No. 21, November 2016.
- 64- Karam Y. Maalawi, "Dynamic Optimization of Functionally Graded Thin-Walled Box Beams," International Journal of Structural Stability and Dynamics, Vol. 17, No.9, 2017.
- 65- M.F. Nasr, K.Y. Maalawi, and M.A.Badr, "Optimization of composite drive shafts against whirling instability," 8th International Conference on Mechanical and Aerospace Engineering (ICMAE 2017), Prague, Czech Republic, July, 2017.
- 66- Karam Y. Maalawi and Gerges Beshay, "Coupled Vibration Analysis of Composite Wind Turbine Blades," 4th International Conference of Engineering Division, National Research Centre, NRC-ICED 2018, Cairo, Egypt, May 6-8, 2018.

- 67- Karam Y. Maalawi, “ Modeling and applications of FGM in aerospace structures, Journal of Aeronautics & Aerospace Engineering - 99162. ISSN: 2168-9792, DOI: 10.4172/2168-9792-C3-028 , 6th International Conference & Exhibition on Mechanical & Aerospace Engineering November 07-08, 2018, Atlanta, Georgia, USA.
- 68- Karam Maalawi. An Introduction to the Optimization of Composite Structures, in Optimum Composite Structures, Karam Maalawi (ED), ISBN 978-1-78985-067-3, <http://dx.doi.org/10.5772/intechopen.81165>, Intechopen, 2018.
- 69- Karam Maalawi. Optimization of Functionally Graded Material Structures: Some Case Studies, Available from: <http://dx.doi.org/10.5772/intechopen.82411>, Intechopen, 2018.
- 70- Karam Maalawi, “On the Dynamics and Structural Design of Offshore Composite Wind Turbine Blades” Energy Challenge Forum, Mechanical Engineering, National Research Centre, Cairo, Egypt, April 7, 2019.
- 71-** Karam Y. Maalawi, Comment on “Comment on Aeroelastic design optimization of thin-walled subsonic wings against divergence” [Thin-walled Struct., 137 (2019) 433–435], Thin-Walled Structures, Volume 140, pp. 477, July2019, <https://doi.org/10.1016/j.tws.2019.04.009>.
- 72- Karam Maalawi, “Mechanics of Functionally Graded Materials with Applications” Forum of Applied Mechanics and Opportunities for Cooperation with Industry, Mechanical Engineering, National Research Centre, Cairo, Egypt, July 7, 2019.
- 73- Gerges E. M. Beshay and Karam Y. Maalawi, “Structural Optimization of Wind Turbine Blades for Improved Dynamic Performance,” <https://www.intechopen.com/books/design-optimization-of-wind-energy-conversion-systems-with-applications/structural-optimization-of-wind-turbine-blades-for-improved-dynamic-performance>, DOI: 10.5772/intechopen.91643, Febraury 2020.
- 74-