IN THE NAME OF GOD

Resume

Personal Information

- **Name:** Hossein Ashrafi**;**
- **Position Held:** Department of Applied Design, Faculty of Mechanical Engineering, University of Kashan, Iran**;**
- **Date of Birth:** January 1983**;**
- **Address:** University of Kashan, P.O. Box 8731751167, Ghotbravandi Blvd., Kashan, Iran**;**
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Education Records

- **Assistant Professor (Sept. 2014 – Present):** Faculty of Mechanical Engineering, University of Kashan, Iran.
- **Ph.D. (Sept. 2010 – June 2014):** K.N. Toosi University of Technology, Iran, First Class Honors and Top Student with Overall GPA 19.43/20.
- **M.Sc. (Sept. 2005 – Sept. 2008):** Shiraz University, Faculty of Mechanical Engineering, Iran, Superior Student with Overall GPA 17.67/20.
- **Bachelor of Engineering (Sept. 2001 – June 2005):** Chamran University of Ahvaz, Iran, Graduated with Honors and Superior Student with Overall GPA 17.2/20.
- **Diploma (Sept. 1997 – June 2001):** Sanyei–Far High School of SAMPAD, Tehran, Top Student with Overall GPA 18.90/20.

Research Interests

1. Computational Solid Mechanics;
2. Contact – Impact Mechanics;
3. Biomechanics and Wound;
4. Viscoelasticity and Viscoplasticity;
5. Ballistic Penetration and Explosion;
6. Micro- and Nanomechanics of Solids;
7. Multi–Scale Modeling of Solid Polymers and Biological Media;
8. Vibration and Dynamic Analysis of Advanced Materials;

Patents

- An Instrument for Measurement of Creep Compliance in Biological Viscoelastic Solids, Iranian Patent Office, Patent No. 58038.
- An Instrument for Measurement of Relaxation Modulus in Biological Viscoelastic Solids, Iranian Patent Office, Patent No. 58039.
- A Measurement System for Identification of Time–Dependent Poisson's Ratios in Biological Viscoelastic Solids, Iranian Patent Office, Patent No. 58536.
- A Combined Hardware/Software System for Identification of Interfacial Contact Pressure between Biological Viscoelastic Solids, Iranian Patent Office, Patent No. 58534.

Membership of Scientific Societies

- Member of International Society of INTECH as Senior Author.
- Member of Iranian Society of Mechanical Engineering.
- Member of Iranian Society of Biomedical Engineering.
- Member of Iranian Society of Polymer Science and Technology.
- Member of Iranian Society of Surface Science and Engineering.
- Member of Centre of Excellence for Research in Advanced Materials and Structures, School of Mechanical Engineering, K.N. Toosi University, Science and Research Branch of Tehran.
- Member of Center of Excellent for Research in Computational Mechanics, Department of Mechanical Engineering, Shiraz University, Science and Research Branch of Shiraz.
- Member of Iranian Society of Nano Science and Technology.

Teaching Experiences

✳ Finite Element Method	✳ Dynamics	✳ Mechanics of Solids
✳ Viscoelasticity	✳ Biomechanics	✳ Computer Aided Design
✳ Mechanical Vibrations	✳ Engineering Drawing	✳ Engineering Mathematic
✳ Advanced Numerical Programming	✳ Impact Mechanics	✳ Theories of Plates and Shells

Workshop and Professional Courses

✳ Finite Element Methods for Engineering Applications	✳ Engineering Analysis with Ls–Dyna
✳ Impact and Damage Mechanics	✳ Biomechanics of Hard Tissues
✳ Modal Testing and Analysis	✳ MATLAB
✳ Contact and Friction	✳ How to Prepare and Publish a Research Paper?

Awards

- ⚞ First Rank and Outstanding Graduate Student with Honors of PhD, K.N. Toosi University, Tehran, 2014.
- ⚞ Membership of the Iranian Society of Geniuses and Talented Student.
- ⚞ Graduate Student with Second Rank Honors of MSc from Shiraz University, 2008.
- ⚞ Top MSc Thesis of Shiraz University, Science and Research Branch of Shiraz, 2008.
- ⚞ First Rank and Outstanding Graduate Student of BE, Chamran University of Ahvaz, 2005.
- ⚞ Top Student of High School, Sanyei–Far High School, Tehran, 2001.
- ⚞ Best Paper in the Field of Aerospace Structures from Iranian Aerospace Society, 2008.
- ⚞ Best Paper in the Field of Biomechanics from Iranian Society of Ergonomics, 2008.

Computer Skills

CAD:	↷ CATIA ↷ SOLID WORKS	↷ PRO/ENGINEER ↷ VISUAL NASTRAN
CAE:	↷ ANSYS WORKBENCH ↷ LS–DYNA & AUTODYN	↷ ALGOR ↷ MSC NASTRAN & PATRAN

Programming:	✎ MATLAB	✎ MAPLE
	✎ FORTRAN	✎ VISUAL C++
Public:	✎ MICROSOFT OFFICE	✎ TECPLOT

Publications

✓ *Selected Journal Papers*

[1] Ashrafi, H. Asemi, K. Shariyat, M. "A Mathematical Boundary Integral Equation Analysis of Inhomogeneous Media by the use of Functionally Graded Elements", Computational and Applied Mathematics, (2013), Under Review.

[2] Ashrafi, H. Asemi, K. Shariyat, M. "A three-dimensional boundary element stress and bending analysis of transversely/longitudinally graded plates with circular cutouts under biaxial loading", European Journal of Mechanics – A/Solids, (2013).

[3] Ashrafi, H. Bahadori, M.R. Keshmiri, H. Shariyat, M. "An FEM Approach for Three – Dimensional Thermoviscoelastic Stress Analysis of Orthotropic Cylinders Made of Polymers", Advanced Materials Research, (2013).

[4] Ashrafi, H. Bahadori, M.R. Keshmiri, H. Shariyat, M. "Boundary Integral Equation Analysis of an Inhomogeneous Medium Made of Functionally Graded Materials", Advanced Materials Research, (2013).

[5] Ashrafi, H. Farid, M. "A Computational Matrix Inversion Approach for Analysis of Contact Problems between Any Rigid Nanoindenter and Viscoelastic Bodies", Aerospace Mechanics Journal, (2010).

[6] Ashrafi, H. Farid, M. "A Finite Element Formulation of Contact Problems for Viscoelastic Structures Based on the Generalized Maxwell Relaxation Model", Aerospace Mechanics Journal, (2009).

[7] Ashrafi, H. Farid, M. "A General Boundary Element Formulation for the Analysis of Viscoelastic Problems", International Journal of Engineering – Transactions A: Basics, (2010).

[8] Ashrafi, H. Farid, M. "A Mathematical Boundary Integral Equation Analysis of Standard Viscoelastic Solid Polymers", Computational Mathematics and Modeling, (2009).

[9] Ashrafi, H. Farid, M. "A New Numerical Approach for Contact Analysis between a Spherical Nanoindenter and the Surface of a Viscoelastic Half–Space", Iranian Journal of Surface and Engineering, (2010).

[10] Ashrafi, H. Farid, M. "An Augmented Lagrangian Finite Element Approach for the Tribological Analysis of Frictional Contact Problems in Viscoelastic Systems", Iranian Journal of Surface and Engineering, (2010).

[11] Ashrafi, H. Shariyat, M. "A Mathematical Approach for Describing Time–Dependent Poisson's Ratios of Periodontal Ligaments", Journal of Biomedical Physics and Engineering, (2012).

[12] Ashrafi, H. Shariyat, M. "A Nanoindentation Identification of Viscoelastic Constitutive Characteristics of Periodontal Ligaments", Journal of Biomedical Physics and Engineering, (2014).

[13] Ashrafi, H. Shariyat, M. "A Numerical Lagrangian Approach for Analysis of Contact Viscoelastic Problems", Computational Mathematics and Modeling, (2014).

[14] Ashrafi, H. Shariyat, M. "A Three–Dimensional Comparative Study of Isoparametric Graded Boundary and Finite Elements in Nonhomogeneous FGM Plates with Cutout", International Journal of Mechanics and Materials in Design, (2014).

[15] Ashrafi, H. Shariyat, M. "A Three–Dimensional Mathematical Describing of Time–Dependent Poisson's Ratios for Linear Viscoelastic Solid Films", Iranian Journal of Surface and Engineering, (2014).

[16] Ashrafi, H. Shariyat, M. "A Time–Domain Boundary Element Method for Modeling the Quasistatic Thermoviscoelastic Behavior of Functionally Graded Materials", International Journal of Mechanics and Materials in Design, (2013).

[17] Ashrafi, H. Shariyat, M. "An Analysis of Frictional Contact Problems between a Rigid Indenter and a Functionally Graded Polymeric Layer", Iranian Journal of Surface and Engineering, (2014), Under Review.

[18] Ashrafi, H. Shariyat, M. "Modeling of Time–Dependent Poisson's Ratios for Viscoelastic Solid Polymers using Nanoindentation Technique", Aerospace Mechanics Journal, (2014).

[19] Ashrafi, H. Shariyat, M. "Modeling of Viscoelastic Properties for Polymeric Thin Solid Layers Using a Contact Nanoindentation Approach", Iranian Journal of Surface and Engineering, (2012).

[20] Ashrafi, H. Shariyat, M. "Numerical Analysis of Contact Problems with Friction Based on a Modified Augmented Lagrangian Optimization Approach Applied to Nanoindentation", Aerospace Mechanics Journal, (2012).

[21] Ashrafi, H. Shariyat, M. Khalili, S.M.R. "A Boundary Element Formulation for the Heterogeneous Functionally Graded Viscoelastic Structures", Applied Mathematics and Computation, (2013).

[22] Ashrafi, H. Shariyat, M. "A Numerical Boundary Integral Equation Analysis for Standard Linear Viscoelastic Media Made of Functionally Graded Materials", International Journal of Mechanical and Materials Engineering, (2014).

[23] Ashrafi, H., Asemi, K., Shariyat, M. Salehi, M. "Two–Dimensional Modeling of Heterogeneous Structures Using Graded Finite Element and Boundary Element Methods", Meccanica, (2013).

[24] Ashrafi, H., Bahadori, M.R. Shariyat, M. "Modeling of Viscoelastic Solid Polymers Using a Boundary Element Formulation with Considering a Body Load", Advanced Materials Research, (2012).

[25] Ashrafi, H., Bahadori, M.R. Shariyat, M. "Two–Dimensional Modeling of Functionally Graded Viscoelastic Materials Using a Boundary Element Approach", Advanced Materials Research, (2012).

[26] Ashrafi, H., Mahzoon, M. Shariyat, M. "A New Mathematical Modeling of Contact Treatment between an Orthotropic Material and a Rigid Indenter", Iranian Journal of Materials Science and Engineering, (2012).

[27] Keshavarz, R. Shakeri, H. Arab, A.M. Ashrafi, H. "Differences of Scapular Position and Orientation during Abduction, Flexion and Scapular Plane elevation Phase between Subjects with and without Shoulder Impingement Syndrome", Iranian Rehabilitation Journal, (2014).

[28] Asemi, K. Ashrafi, H. "Three-Dimensional Stress and Free Vibration Analyzes of Functionally Graded Plates with a Circular Hole by the Use of Graded Finite Element Method", Journal of Applied Mechanics and Technical Physics, (2014).

[29] Asemi, K. Shariyat, M. Ashrafi, H. Salehi, M. "A Full Compatible Three-Dimensional Elasticity Element for Buckling Analysis of FGM Rectangular Plates Subjected to Various Combinations of Biaxial Normal and Shear Loads", Finite Elements in Analysis and Design, (2013).

[30] Asemi, K., Ashrafi, H., Salehi, M. Shariyat, M. "Three–Dimensional Static and Dynamic Analysis of Functionally Graded Elliptical Plates, Employing Graded Finite Elements", Acta Mechanica, (2013).

✓ *Selected Conference Papers*

[1] Ashrafi, H. Bahadori, M.R. Keshmiri, H. Shariyat, M. "Boundary Integral Equation Analysis of an Inhomogeneous Medium Made of Functionally Graded Materials", In Proceedings of the 2013 3nd International Conference on Advanced Materials Research (ICAMR), China, January 7–9, pp.–, www.scientific.net, (2013).

[2] Ashrafi, H. Bahadori, M.R. Keshmiri, H. Shariyat, M. "An FEM Approach for Three – Dimensional Thermoviscoelastic Stress Analysis of Orthotropic Cylinders Made of Polymers", In Proceedings of the 3nd International Conference on Advanced Materials Research, China, January 7–9, www.scientific.net, (2013).

[3] Ashrafi, H. Shariyat, M. "Thermoviscoelastic Analysis of Three–Dimensional Orthotropic Solid Polymers Using a General Finite Element Formulation", In Proceedings of the 21th Annual International Conference on Mechanical Engineering – ISME, K.N. Toosi University of Technology, Tehran, May 7–9, www.isme.ir, (2013).

[4] Ashrafi, H. Shariyat, M. "A Boundary Element Formulation for Standard Linear Viscoelastic Structures Made of Functionally Graded Materials", In Proceedings of the 21th Annual International Conference on Mechanical Engineering – ISME, K.N. Toosi University of Technology, Tehran, May 7–9, www.isme.ir, (2013).

[5] Ashrafi, H. Shariyat, M. "Material Nonhomogeneity Modeling of Functionally Graded Viscoelastic Materials Using Boundary and Finite Element Techniques", In Proceedings of the 3rd International Conference on Composites: Characterization, Fabrication & Application, Iran Composite Institute, December 15–18, (2012).

[6] Ashrafi, H. Bahadori, M.R. Keshmiri, H. "Numerical Analysis of Thermoelastic behavior of Post-Restored Teeth Using a Generalized Approach", In Proceedings of the IEEE 19th Iranian Conference on Biomedical Engineering, Tehran, December 20–21, www.ieeexplore.ieee.org, (2012).

[7] Ashrafi, H. Bahadori, M.R. Keshmiri, H. "Numerical Contact Analysis of Periodontal Ligament under Tooth Mobility by Considering Its Viscoelastic Constitutive Behavior", In Proceedings of the IEEE 19th Iranian Conference on Biomedical Engineering, Tehran, December 20–21, www.ieeexplore.ieee.org, (2012).

[8] Shariyat, M. Bandband, H. Ashrafi, H. "Reduction of Human Head Injury By Designing an Energy Absorption On Helmet from the Use of Aluminum Honeycomb Panels", In Proceedings of the IEEE 19th Iranian Conference on Biomedical Engineering, Tehran, December 20–21, www.ieeexplore.ieee.org, (2012).

[9] Ashrafi, H., Bahadori, M.R. Shariyat, M. "Two–Dimensional Modeling of Functionally Graded Viscoelastic Materials Using a Boundary Element Approach", In Proceedings of the 2012 2nd International Conference on Advanced Materials Research (ICAMR), China, January 7–9, www.scientific.net, (2012).

[10] Ashrafi, H., Bahadori, M.R. Shariyat, M. "Modeling of Viscoelastic Solid Polymers Using a Boundary Element Formulation with Considering a Body Load", In Proceedings of the 2012 2nd International Conference on Advanced Materials Research (ICAMR), China, January 7–9, www.scientific.net, (2012).

[11] Ashrafi, H. Shariyat, M. "Thermoviscoelastic Analysis of Three–Dimensional Orthotropic Solid Polymers Using a General Finite Element Formulation", In Proceedings of the 10th International Seminar on Polymer Science and Technology – ISPST2012, Amirkabir University of Technology, Iran, October 21–25, (2012).

[12] Ashrafi, H. Shariyat, M. "Effects of Viscoelasticity and Time–Dependent Poisson's Ratio on Nanoindentation Measurements of Solid Polymers", In Proceedings of the 10th International Seminar on Polymer Science and Technology – ISPST2012, Amirkabir University of Technology, Tehran, Iran, October 21–25, (2012).

[13] Bandband, H. Ashrafi, H. Shariyat, M. "Modeling and Analysis of Vibration Response in Human Skull System with Time–Dependent Viscoelastic Nature", In Proceedings of the IEEE 18th Iranian Conference on Biomedical Engineering, Tarbiat Modares University, Tehran, December 14–16, www.ieeexplore.ieee.org, (2011).

[14] Ashrafi, H. Shariyat, M. "Identification of Viscoelastic Constitutive Characteristics for Periodontal Ligaments", In Proceedings of the 1st MEFOMP International Conference of Medical Physics, Shiraz University of Medical Sciences, Iran, October 26–28, www.jbpe.org, (2011).

[15] Ashrafi, H. Shariyat, M. "Thermoelastic Analysis of Post–Restored Teeth Using a Generalized Mathematical Approach", In Proceedings of the 1st MEFOMP International Conference of Medical Physics, Shiraz University of Medical Sciences, Iran, October 26–28, www.jbpe.org, (2011).

[16] Khalili, S.M.R. Ashrafi, H. Shariyat, M. "Biomedical Applications of Smart Materials in Dentistry", In Proceedings of the 1st MEFOMP International Conference of Medical Physics, Shiraz University of Medical Sciences, Iran, October 26–28, www.jbpe.org, (2011).

[17] Ashrafi, H. Shariyat, M. "A Nanoindentation Modeling of Viscoelastic Creep and Relaxation Behaviors of Ligaments", In Proceedings of the 17th IEEE Iranian Conference on Biomedical Engineering, Medical University of Esfahan, Iran, November 3–4, www.ieeexplore.ieee.org, (2010).

[18] Ashrafi, H. Shariyat, M. "A Mathematical Approach for Describing the Time–Dependent Poisson's Ratio of Viscoelastic Ligaments", In Proceedings of the 17th IEEE Iranian Conference on Biomedical Engineering, Medical University of Esfahan, Iran, November 3–4, www.ieeexplore.ieee.org, (2010).

[19] Ashrafi, H. Shariyat, M. "A Nanoindentation Modeling Of Time–Dependent Poisson's Ratio for Viscoelastic Solid Polymers", In Proceedings of the 3rd International Congress on Nanoscience and Nanotechnology – ICNN, Shiraz University, Iran, November 9–11, (2010).

[20] Ashrafi, H. Shariyat, M. "A Viscoelastic Nanoindentation Modeling On Polymeric Solid Films by an Augmented Lagrangian Contact Analysis", In Proceedings of the 3rd International Congress on Nanoscience and Nanotechnology – ICNN, Shiraz University, Iran, November 9–11, (2010).

[21] Ashrafi, H. Farid, M. "A Meshless Local Boundary Integral Equation Approach Applied to Functionally Graded Viscoelastic Solid Polymers", In Proceedings of the 18th Annual International Conference on Mechanical Engineering – ISME, Sharif University of Technology, Tehran, May 11–13, (2010).

[22] Ashrafi, H. "An Augmented Lagrangian Treatment for Viscoelastic Contact Formulation", In Proceedings of the 2009 Joint ASCE – ASME – SES Conference on Mechanics and Materials, Blacksburg, VA, USA, June 24–27, pp. 122–123, http://scholardesk.com, (2009).

[23] Ashrafi, H. Farid, M. "Measurement of Mechanical Properties of Bones and Teeth Using Nanoindentation", In Proceedings of the IEEE 16th Iranian Conference on Biomedical Engineering, Tehran University of Medical Sciences, Iran, December 30–31, www.ieeexplore.ieee.org, (2009).

[24] Ashrafi, H. Farid, M. "An Augmented Lagrangian Finite Element Modeling of the Contact Problems in Anatomical Simulations", In Proceedings of the IEEE 16th Iranian Conference on Biomedical Engineering, Tehran University of Medical Sciences, Iran, December 30–31, www.ieeexplore.ieee.org, (2009).

[25] Ashrafi, H. Kasraei, M. Farid, M. "Boundary Element Formulation for Viscoelastic Structures Using the SLS Model", In Proceedings of the 8th International Congress on Civil Engineering, Shiraz University, Iran, May 11–13, (2009).

[26] Ashrafi, H. Farid, M. "An Analytical Modeling for Linearly Viscoelastic Functionally Graded Solids by Considering Separable Relaxation Functions in Space and Time", In Proceedings of the 17th Annual

International Conference on Mechanical Engineering – ISME, University of Tehran, Iran, May 19–21, www.isme.ir, (2009).

[27] Ashrafi, H. Kasraei, M. Farid, M. "An Incremental Relaxation Finite Element Approach Adaptive in Space and Time for Generalized Viscoelastic Maxwell Model", In Proceedings of the 18th Biennial International Conference on Computer Methods in Mechanics, University of Ziolona Gora, Poland, May 18–21, (2009).

[28] Ashrafi, H. Farid, M. Kasraei, M. "The Viscoelastic Boundary Integral Equation Analysis of Infinite Polymeric Plates Using an Alternative Time Marching Treatment", In Proceedings of the 18th Biennial International Conference on Computer Methods in Mechanics, University of Ziolona Gora, Poland, May 18–21, (2009).

[29] Ashrafi, H. Kasraei, M. "Mathematical Modeling of the Time–Dependent Poisson's Ratio in Linear Viscoelastic Solid Fruits", In Proceedings of the CIGR Section VI International Symposium on Food Processing, Monitoring Technology in Bioprocesses and Food Quality Management, Potsdam, Germany, 31 August – 02 September, www.scopus.com, (2009).

[30] Ashrafi, H. Farid, M. Kasraei, M. "Boundary Element Formulation for General Viscoelastic Solids", In Proceedings of the 7th Annual International Conference of Iranian Aerospace Society – Aero2008, Sharif University of Technology, Tehran, February 19–21, www.civilica.com, (2008).

[31] Ashrafi, H. Hematiyan, M. R. Kasraei, M. "Infinite Boundary Element Formulation for the Analysis of Half–Space Problems", In Proceedings of the 4th National Conference on Civil Engineering, University of Tehran, Iran, May 7–9, www.civilica.com, (2008).

[32] Ashrafi, H. Kasraei, M. Farid, M. "Finite Element Formulation for Viscoelastic Contact Problems with Friction Based on the Generalized Maxwell Model", In Proceedings of the 16th Annual International Conference on Mechanical Engineering – ISME, Shahid Bahonar University of Kerman, Iran, May 13–15, www.isme.ir, (2008).

[33] Ashrafi, H. Farid, M. Kasraei, M. "Boundary Element Formulation for the Standard Viscoelastic Solids in Time Domain", In Proceedings of the 16th Annual International Conference on Mechanical Engineering – ISME, Shahid Bahonar University of Kerman, Iran, May 13–15, www.isme.ir, (2008).

[34] Ashrafi, H. Kasraei, M. Farid, M. "Modeling of the Contact Problems of the Human Body/Seat Interface in a Vibration Area", In Proceedings of the International Conference on Ergonomics – Ergo2008, Iranian Society of Ergonomics, Tehran, May 7–8, (2008).

[35] Ashrafi, H. Mahzoon, M. Kasraei, M. "Modeling the Contact Behavior of an Orthotropic Half–Space indenting by a Rigid Indenter", In Proceedings of the International Conference on Composites: Characterization, Fabrication, and Application, Iran Composite Institute, Kish, December 15–18, (2008).

[36] Ashrafi, H. Farid, M. Kasraei, M. "Modeling the Contact Problems of Film – Substrate Interfaces under Nanoindentation Procedure", In Proceedings of the International Conference on Composites: Characterization, Fabrication, and Application, Iran Composite Institute, Kish, December 15–18, (2008).

[37] Ashrafi, H. Farid, M. Kasraei, M. "Identification of Nano–Scale Mechanical Properties of Bio–Tissues by means of a Novel Nanoindentation Technique", In Proceedings of the 2nd International Congress on Nanoscience and Nanotechnology – ICNN2008, University of Tabriz, Iran, October 28–30, (2008).

[38] Ashrafi, H. Kasraei, M. Farid, M. "A New Nanoindentation Approach for Independently Determining of Relaxation Modulus and Creep Compliance of Viscoelastic Solids", In Proceedings of the 2nd International Congress on Nanoscience and Nanotechnology – ICNN2008, University of Tabriz, October 28–30, (2008).

[39] Ashrafi, H. Farid, M. Kasraei, M. "Nonlinear Finite Element Modeling of Nanoindentation to Simulate Contact Behavior in Film–Substrate Interface", In Proceedings of the 2nd International Congress on Nanoscience and Nanotechnology – ICNN2008, University of Tabriz, Iran, October 28–30, (2008).