



## Curriculum Vitae

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### *Dr. Abbas Pak*

#### **Assistant Professor**

*Faculty of Engineering  
Bu-Ali Sina University  
Hamadan  
Iran  
Email: a.pak@basu.ac.ir*

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### **Educations:**

- 🌐 **Visiting Scholar** at **Tokyo Institute of Technology**, Tokyo, Japan (2007-2008).
- 🌐 **Ph. D.** in Manufacturing Engineering (2003 to 2008).  
Tarbiat Modares University, Tehran, Iran,  
Dissertation title " **Analysis, Design and Manufacture of a High-Power Load-Independent Ultrasonic Transducer**"
- 🌐 **M.Sc** in Manufacturing Engineering (2001- 2003).  
Tarbiat Modares University, Tehran, Iran,  
Dissertation title: "**Accuracy of Creep Feed Grinding of Tungsten Carbide Using Diamond Wheel**".
- 🌐 **B.Sc.** in Manufacturing Engineering (1997- 2001).  
Tabriz University, Tabriz, Iran  
Graduation project title: "**Manufacturing of Copper Electrode by Using Electroforming and Investigating Electrode Wear in Electro Discharge Machining**"

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## Skills and Research Interest:

- 🌐 **Advanced Manufacturing Processes** (es. High power Ultrasonic Assisted Processes)
- 🌐 **Precision and Super Finishing Manufacturing Processes.**
- 🌐 **Advanced Metrology and Measurement Systems.**
- 🌐 **Machine tools and numerical control machine tools**

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## Honor:

- 🌐 **1<sup>st</sup> Rank** among B.Sc. graduates of Manufacturing Engineering in Tabriz University (2001).
- 🌐 **1<sup>st</sup> Rank** among M.Sc. graduates of Manufacturing Engineering in Tarbiat Modares University (2003).
- 🌐 Member of **National Intelligence Foundation** of I.R. Iran

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## Trainings attended and certificates:

- 🌐 TEM and SEM Instruments (2006).
- 🌐 Advanced Manufacturing Processes (2003).
- 🌐 Advanced CNC Machine Tool Design (2003).
- 🌐 Grinding and Super Finishing (2002).
- 🌐 Test and Calibration of Machine Tools (2001).
- 🌐 Advanced Metrology and Measurement Systems (2001).

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## Patents:

- 🌐 *Design and Manufacturing of Mechanism and Special Rotary Horn for Continous Ultrasonic Textiles Welding "* Patented in Scientific and Industrial Research Organization of I.R.Iran in 2017.
- 🌐 *"Design and Manufacture of Rotary Ultrasonic Tool"* Patented in Scientific and Industrial Research Organization of I.R.Iran in 2015.
- 🌐 *"Ultrasonic Assisted Indentation Forming"* Patented in Scientific and Industrial Research Organization of I.R.Iran in 2010.
- 🌐 *"Ultrasonic Assisted Grinding of Superalloy"* Patented in Scientific and Industrial Research Organization of I.R.Iran in 2009.






- 🌐 “*Design and Manufacture of Multi-frequency and High Power Ultrasonic Transducer*” Patented in Scientific and Industrial Research Organization of I.R.Iran in 2009.
- 🌐 “*Design and Manufacture of Ultrasonic Hammer Penning Tool*” Patented in Scientific and Industrial Research Organization of I.R.Iran in 2009.
- 🌐 “*Design and Manufacture of High Power and High Frequency Ultrasonic Transducer by Using Central Mass*” Patented in Scientific and Industrial Research Organization of I.R.Iran in 2008.

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## Papers:

## Journals:

- 🌐 A. Pak, H. Fattahi, *Investigation of Electro Discharge Machining Process Assisted Ultrasonic Vibrations with TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> and ZnO NanoPowder Suspended Dielectric Fluid*, Amirkabir Mechanical Engineering Journal Online from 28 January 2017.
- 🌐 H. Deilami, A. Pak, M. Mahmoudi, *Effects of Process Parameters in Ultrasonic Vibration Assisted Incremental Sheet Metal Forming*, Iranian Journal of Manufacturing Engineering, 2016, Vol2, No 3.
- 🌐 Hosein B. Asadi, M. Modaberifar, A. Pak, *Design, fabrication and development of a capacitive-type linear encoder using electrostatic induction*, Modares Mechanical Engineering, Vol. 16, No. 3, 2016.
- 🌐 A. Pak, H. Deilami, M. Mahmoudi, *Investigation of ultrasonic assisted incremental sheet metal forming process*, Modares Mechanical Engineering, Vol. 14, No. 1, 2015.
- 🌐 A. Abdullah, A. Pak & et., *Study of the Behavior of Ultrasonic Piezo-Ceramic Actuators by Simulations*, ELECTRONIC MATERIALS Journal, 2014.
- 🌐 A. Pak, Amir Abdullah, *Creep feed Grinding of Tungsten Carbide by Using of Resin-Bonded Nickel-Coated Diamond Wheel*, Advanced Materials Research Vol. 325, 2011.

- 
 A. Abdullah , A. Farhadi , A. Pak, *Ultrasonic -Assisted Dry Creep-Feed Up-Grinding of Super alloy Inconel 738LC*, *Experimental Mechanics*, 2011 .
  
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 M. Paknejad, A. Abdullah S. Dashti, A. Pak, **Analytical and Experimental Analysis of Ultrasonic Assisted Indentation Forming of Tube**, *Manufacturing Engineering journal*, No. 1, 2010 .
  
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 S. Dashti , M.Paknejad , A. Abdullah, A. Pak *FEM Simulation and Experimental Analysis of Ultrasonic Assisted Indentation Forming of Tube*, *Manufacturing Engineering journal*, No. 1, 2010 .
  
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 A. Abdullah, M. Shahini, A. Pak **“An Approach to Design a High Power Piezoelectric Ultrasonic Transducer”** published by *Journal of Electro-ceramics*, ISSN 1385-3449 (print) 1573-8663 (online), Jan. 2008 .
  
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 A. Abdullah, A. Pak **“Correct Prediction of the Vibration Behavior of the High Power Ultrasonic Transducer by FEM Simulation”**, *The International Journal of Advanced Manufacturing Technology*, ISSN 0268-3768 (print) 1433-3015 (online), Sept. 2007 .
  
- 
 A. Abdullah, A. Pak, M. Farahi, M. Barzegari **“Profile Wear of Resin-Bonded Nickel-Coated Diamond Wheel and Roughness in Creep-Feed Grinding of Cemented Tungsten Carbide**, *Journal of Materials Processing Technology*, 183 (2007) 165-168 .

## Conferences:



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 A. Pak, H. Darabi, **“Numerical and Modeling of Continuous Ultrasonic Welding Roller Tool**, 24<sup>th</sup> annual Iranian Society of Mechanical Engineering Conference ISME2017.
  
- 
 A. Pak, A. Shirinabadi, A. Shahidi, **“FEM Modeling of the Effect of applying ultrasonic waves to the fluid in a cylindrical container through a concave cross section”**, 24<sup>th</sup> annual Iranian Society of Mechanical Engineering Conference ISME2017.
  
- 
 A. Pak, H. Fattahi **“Investigation of Electro Discharge Machining Process Assisted Ultrasonic Vibrations with TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> and ZnO NanoPowder**

*Suspended Dielectric Fluid*"24<sup>th</sup> annual Iranian Society of Mechanical Engineering Conference ISME2016.

-  **A. Pak**, A. Farahani, "*Analytical and Numerical Modeling of Ultrasonic Milling Machining*, 24<sup>th</sup> annual Iranian Society of Mechanical Engineering Conference ISME2016
-  **A. Pak**, H. Fattahi, "*Investigating the Effects of Machining Parameters in the Process of EDM with Nano Powders*, 23<sup>th</sup> annual Iranian Society of Mechanical Engineering Conference ISME2015.
-  **A. Pak**, A. Abdullah , "*Modeling, Fabrication and Test of High power Ultrasonic Transducer with a Central Mass and Variable Resonance Frequency*", 3rd International and 12th National Conference on Manufacturing Engineering (ICME 2011) , Iran, 27 , 2011.
-  S. Dashti , A. Abdullah , **A. Pak** , A. Mohammad Beigi , "*Finite Element Analysis of Ultrasonic Vibration on Tube Indentation Forming*" , 3rd International and 12th National Conference on Manufacturing Engineering (ICME 2011) , Iran, 2011.
-  A. Abdullah , **A. Pak** , R. Abedini, "*Design, Modelling and Fabrication of Ultrasonic Pinning Tool*" , 1st National Congress Aging Air Craft , Iran, 05 July2011.
-  M. Paknejad , A. Abdullah , **A. Pak** , A. Mohammad Beigi , "*Theoretical-Experimental Analysis of Ultrasonic Assisted Tube Forming*" , 3rd International and 12th National Conference on Manufacturing Engineering (ICME 2011) , Iran, 2011.
-  M. Shalvand A. Abbullah, **A. Pak**, "*Improvement of Fatigue Strength of Welded Joints in Stainless Steel by Ultrasonic Peening*, 11th Iranian Conference on Manufacturing Engineering, 2010.
-  A. Abedini, A. Abdullah, **A. Pak**, "*Design and modeling of 1KW ultrasonic transducer by using FEM*, 18<sup>th</sup> annual Iranian Society of Mechanical Engineering Conference ISME2010.











-  A. Abdullah , M.Malaki, **A. Pak**, R. Abedini , *Finite element analysis of the vibration of a Piezoelectric high power ultrasonic transducer* , Electronic Materials and Applications Conference, January 20-22,2010 , FL, USA.
-  A. Farhadi , A. Abdullah, J. Zarkoob **A. Pak**, *Analytical and Numerical simulation Of Ultrasonic Assisted Grinding* , Proceedings of the ASME 2010 10th Biennial Conference on Engineering Systems Design and Analysis ESDA2010 July 12-14, 2010, Istanbul, Turkey.
-  **Pak, A.**, Shahidi, A., *“Investigation of Electrode Wear in Electro Discharge Machining” Proceeding of 1th Mechanical Engineering Student Conference, Tabrize University, 2001, Tabriz, Iran.*
-  **Pak, A.**, Shahidi, A., *“ New Improvement in Gear Machining by Using Horizontal Milling Machine” Proceeding of 1th Mechanical Engineering Student Conference, Tabrize University, 2001, Tabriz, Iran.*
-  **Pak, A.**, Shahidi, A., *“ Using of Hobbing Tools for Gear Machining in Horizontal Milling Machine” Proceeding of 5th Iranian Manufacturing Engineering Conference, Amirkabir University of Technology, 17-18 Feb. 2003, Tehran, Iran.*
-  A. Abdullah, **A. Pak** *“Grinding wheel Radial Wear and Temperature Error in Creep-feed Grinding” Proceeding of 5th Iranian Manufacturing Engineering Conference, Amirkabir University of Technology, 17-18 Feb. 2003, Tehran, Iran.*
-  A. Abdullah, **A. Pak**, M. Farahi, M. Barzegari *“Force and Specific Energy in Creep-Feed Grinding of Tungsten Carbide by using Resin–Bond Diamond wheel” Proceedings of 6th Manuf. Engineering Conference, 22nd – 24th Dec. 2003.*
-  A. Abdullah, **A. Pak**, M. Farahi, M. Barzegari *“Profile Wear of Resin-Bond Diamond Wheel and Roughness in Creep-Feed Grinding of Tungsten Carbide” Proceeding of 6th Iranian Manufacturing Engineering Conference, Amirkabir University of Technology, 22-25 Dec. 2003, Tehran, Iran .*
-  A. Abdullah, **A. Pak**, A. Shahidi, *“Equivalent Electrical Simulation of a High-Power Ultrasonic Piezoelectric Transducer by Using Finite Element*

*Analysis” Proceeding of 15th International Conference on Mechanical Engineering-ISME2007, 15-17th May 2007 .*

-  *A. Abdullah, A. Pak, M. Shalvandi “Improvement of Fatigue Strength of Welded Joints in Stainless Steel by Ultrasonic Peening” Proceeding of 15th International Conference on Mechanical Engineering-ISME2007, 15-17th May 2007 .*
-  *A. Pak, A. Abdullah “Correct Predication of the Vibration Behavior of the High Power Ultrasonic Transducers by FEM Simulation” Proceedings of the 13th International Conference on Experimental Mechanics, Alexandroupolis, Greece, July 1-6, 2007 .*

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### **M.Sc. Supervise and Co-Advisor :**

-  *Design and Manufacturing of Continuous wire Ultrasonic Cleaning , M.Sc. Project–6 units-ter. 2016)*
-  *Design, Modeling and Manufacturing of Ultrasonic Welding Tool, M.Sc. Project–6 units-ter. 2016)*
-  *Design, Modeling and Manufacturing of Rotary Ultrasonic Assisted Tool M.Sc. Project–6 units-ter. 2014)*
-  *Finite Element Modeling of Ultrasonic Vibration Assisted Milling M.Sc. Project–6 units-ter. 2013)*
-  *Investigation of Electro Discharge Machining Process Assisted Ultrasonic Vibrations with NanoPowder Suspended Dielectric Fluid M.Sc. Project–6 units-ter. 2012)*
-  *Investigation of Ultrasonic Assisted Incremental Forming Process M.Sc. Project–6 units-ter. 2012)*
-  *Design and Manufacture of a Compound Matching for Multi Ultrasonic Heads (M.Sc. Project-6 units- ter. in March 2008)*
-  *Design and manufacture of ultrasonic peening tool (M.Sc. Project–6 units-2009)*
-  *Ultrasonic assisted grinding of superalloys (M.Sc. Project–6 units- 2008)*
-  *Simulation of ultrasonic assisted indentation forming and ironing (M.Sc. Project–6 units- 2008)*

- 🌐 *Ultrasonic Transducers Optimum Arrangements on a Vibrating Plate for Cleaning Purpose* (M.Sc. Project–6 units – ter 2007).
- 🌐 *Fatigue Strength of Stainless-Steel Welded Joints processed by Ultrasonic Peening* (M.Sc. Project–6 units-ter. in Sept. 2006)

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### **Courses taught:**

- 🌐 *Production Methods*
- 🌐 *CAD/CAM*
- 🌐 *Measurement Systems*
- 🌐 *Electro- physical Processes.*
- 🌐 *Advanced Manufacturing Processes.*
- 🌐 *Precision Manufacturing Process.*
- 🌐 *Numerical Control of Machine Tools.*
- 🌐 *Machinability.*
- 🌐 *Test and Calibration of Machine Tools.*
- 🌐 *Machine Tools and Operations.*

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### **Professional Activities:**

- 🌐 Member of Iranian Society of Manufacturing Engineers (SMEI).

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### **Familiar with software:**

- 🌐 **Mechanical Engineering:** Auto CAD, Mechanical Desktop, Solid Works, Visual NASTRAN, ANSYS, Surf CAM, Mold Flow.
  - 🌐 **Programming:** Turbo C.
  - 🌐 **General and official:** M.S. office and general computer software.
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