



## Curriculum Vitae

### Personal information

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### Education

**PhD (2009-2014)** In Mechanical Engineering, Mechanical Engineering Department, Amirkabir University of Technology, Tehran, Iran

**Visiting scholar (2012-2013)** PMA Division, Mechanical Engineering Department, KU Leuven, Leuven, Belgium

**MSc (2007-2009)** In Manufacturing Engineering, Mechanical Engineering Department, College of Engineering, University of Tehran, Tehran, Iran

**BSc (2003-2007)** A degree in Manufacturing Engineering, Mechanical Engineering Department, Amirkabir University of Technology, Tehran, Iran

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### Academic positions

**Associate professor (Since 2021)** Mechanical Engineering Department, Babol Noshirvani University of Technology, Iran

**Researcher (2023-2024)** Department of Mathematics & Statistics, Faculty of Science & Engineering, University of Limerick, Ireland

**Assistant professor (2014-2021)** Mechanical Engineering Department, Babol Noshirvani University of Technology, Iran

**Lecturer (2009-2014)** Mazandaran Institute of Technology, Iran

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## *Dissertations*

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<i>PhD</i>	Analysis of axisymmetric incremental forming of aluminum sheet using the upper-bound and numerical approach and study of parameters to control thickness distribution
<i>MSc</i>	Simulation and experimental investigation into the equal channel angular extrusion for achieving Nano size grains
<i>BSc</i>	Analysis of springback in bending of Polymethylmethacrylate (PMMA) sheets using finite element method

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## *Work experience*

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<i>Founder (Since 2020)</i>	Home decor manufacturing, DecoMaz company, Technology incubator, Mazandaran Institute of Technology
<i>Manager (2018-2021)</i>	Entrepreneurship and industrial liaison office, Deputy of research and technology, Babol Noshirvani University of Technology
<i>Manager (Since 2015)</i>	CNC machine tools workshop, Mechanical Engineering Department, Babol Noshirvani University of Technology
<i>Trainee (2007)</i>	MAPNA Turbine Engineering & Manufacturing Co. (TUGA)
<i>Trainee (2005)</i>	Plastic injection molding, Hiwa Corporation

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## *Industrial/Academic projects*

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<i>2020-2022</i>	Research on finite element simulation of forming process of external liner of combustion chamber, MAPNA Turbine Engineering & Manufacturing Co. (TUGA)
<i>2019-2022</i>	Design and manufacture of rotary roll forming machine, Mavadkaran Eng. Co., MAPNA Group
<i>2019-2022</i>	Design and manufacture of axial feeding mechanism for tube hydroforming process, Mavadkaran Eng. Co., MAPNA Group
<i>2019</i>	Rotary roll forming of Hastelloy-X superalloy sheet for manufacturing gas turbine liners, Mavadkaran Eng. Co., MAPNA Group
<i>2019</i>	Hydroforming of Nimonic75 superalloy tube for manufacturing turbine baffle, Mavadkaran Eng. Co., MAPNA Group
<i>2017-2021</i>	Development of an experimental/theoretical method for the prediction of ductile fracture in roll forming processes, Iran National Science Foundation and Russian Foundation for Basic Research (Joint research)

<i>2017</i>	Design and forming of logo of Babol Noshirvani University of Technology using incremental sheet forming
<i>2017</i>	Design and forming of logo of Mazandaran University using incremental sheet forming
<i>2012</i>	Design and manufacture of a roll forming machine producing 90-degree V sections for Me'mar No Aria Co.
<i>2009</i>	Investigation into Tailor-Welded Blanks (TWB) forming process and feasibility study for manufacturing of automobile parts, Iran Khodro Industrial Group

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### *Taught courses*

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#### *Undergraduate*

Manufacturing processes  
Fundamentals of die design  
Fundamentals of heat treatment  
Mechanics of materials  
Statics

#### *Graduate*

Metallurgy in manufacturing  
Finite element analysis  
Ductile fracture mechanics  
Computer simulation

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### *Research interests*

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Metal forming	Finite element analysis
Analysis of manufacturing processes	Multiscale modeling
Die design	Crystal plasticity
Incremental forming	Metal plasticity
Ductile fracture of metals	Deformation mechanics of materials
Mechanical behavior characterization of metals	Constitutive modelling

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## *Publications (Journal articles)*

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- [67] Elyasi, M, Khoram, D, Aghajani Derazkola, H, **Mirnia, MJ**, “Effects of process parameters on properties of friction stir additive manufactured copper”, *Int J Adv Manuf Technol*, 127, 5651–5664, 2023
- [66] Khoram, D, Elyasi, M, Aghajani Derazkola, H, **Mirnia, MJ**, “Effects of shear bond on quality of Friction stir additive manufactured copper”, *Materials Letters*, 352, 135153, 2023
- [65] Karimi Firouzjaei, M, Moslemi Naeni, H, Kasaei, MM, **Mirnia, MJ**, da Silva, LF, “A microscale constitutive model for thin stainless steel sheets considering size effect”, *Proc IMechE Part L: J Materials: Design and Applications*, 2023, DOI: 10.1177/14644207231169456
- [64] Zahedi Dizajyekan, A, **Mirnia, MJ**, Mollaei Dariani, B, “Fracture investigation in single point incremental forming of the Al/Cu laminated sheets using coupled damage plasticity model”, *CIRP Journal of Manufacturing Science and Technology*, 43, 242-259, 2023
- [63] Seyyedi, SE, Gorji, H, Bakhshi Jooybari, M, **Mirnia, MJ**, “Comparison between conventional press-working and incremental forming in hole-flanging of AA6061-T6 sheets using a ductile fracture model”, *International Journal of Solids and Structures*, 270, 112225, 2023
- [62] **Mirnia, MJ**, Fallah, A, Elyasi, M, “Experimental and Numerical Investigation of the Effect of Preform on Hot Forging of Bimetallic Components from Aluminum and Brass”, *Modares Mechanical Engineering*, 23, 67-79, 2023 (in Persian)
- [61] Ghasemi, R, Elyasi, M, Baseri, H, **Mirnia, MJ**, “Microstructural analysis of sheet hydroforming process assisted by radial ultrasonic punch vibration in a hydro-mechanical deep drawing die”, *Int J Adv Manuf Technol*, 125, 5359–5368, 2023
- [60] Isapour Rudy, M, Vahdati, M, **Mirnia, MJ**, “Statistical analysis and optimization of variables affecting the end diameter of AISI 304 steel tube produced by flaring process”, *Amirkabir Journal of Mechanical Engineering*, 54, 2861-2876, 2023 (in Persian)
- [59] Ghafari, M, Elyasi, M, **Mirnia, MJ**, “Investigating the microstructure variation of commercially pure titanium in hot resistance spinning”, *Iranian Journal of Manufacturing Engineering*, 9, 36-46, 2022 (in Persian)
- [58] Khademi, M, Moslemi Naeni, H, **Mirnia, MJ**, Kasaei, MM, da Silva, LF, “Fracture prediction of AA6061-T6 sheet in bending process using Gurson–Tvergaard–Needleman model”, *Proc IMechE Part L: J Materials: Design and Applications*, 2022, DOI: 10.1177/14644207221134504
- [57] Karimi Firoozjaei, M, Moslemi Naeni, H, Kasaei, MM, **Mirnia, MJ**, “A Constitutive Model for Stainless Steel 304 Sheet Considering Size Effect in Micro-Scale”, *Modares Mechanical Engineering*, 22, 519-528, 2022 (in Persian)
- [56] Khademi, M, Moslemi Naeni, H, **Mirnia, MJ**, “Prediction of 6061-T6 Aluminum Fracture Behavior Using the Extended GTN Criterion”, *Modares Mechanical Engineering*, 22, 485-496, 2022 (in Persian)
- [55] Talebi-Ghadikolaee, H, Moslemi Naeni, H, Talebi Ghadikolaee, E, **Mirnia, MJ**, “Predictive modeling of damage evolution and ductile fracture in bending process”, *Materials Today Communications*, 2022, DOI: <https://doi.org/10.1016/j.mtcomm.2022.103543>
- [54] Emami, R, **Mirnia, MJ**, Elyasi, M, Zolfaghari, A, “An experimental investigation into single point incremental forming of glass fiber-reinforced polyamide sheet with different fiber orientations and volume fractions at elevated temperatures”, *Journal of Thermoplastic Composite Materials*, 2022, DOI: 10.1177/08927057221074266
- [53] Seyyedi, SE, Gorji, H, **Mirnia, MJ**, Bakhshi Jooybari, M, “Prediction of ductile damage and fracture in the single and multi-stage incremental hole-flanging processes using a new damage accumulation law”, *Int J Adv Manuf Technol*, 119, 4757-4780, 2022
- [52] Fallahati Naqibi, M, Elyasi, M, Jamshidi Aval, H, **Mirnia, MJ**, “Theoretical and experimental studies on fabrication of two-layer aluminum–copper pipe by friction stir additive manufacturing”, *Trans. Nonferrous Met. Soc. China*, 31, 3643-3658, 2021
- [51] Seyyedi, SE, Bakhshi Jooybari, M, Gorji, H, **Mirnia, MJ**, “An Experimental and Numerical Investigation of Deformation Mechanics on Hole-Flanging Process of AA6061-T6 Sheets through Single-Point Incremental Forming”, *Journal of Stress Analysis*, 6, 29-46, 2021

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- [49] Darzi, S, **Mirnia, MJ**, Elyasi, M, “Single-point incremental forming of AA6061 aluminum alloy at elevated temperatures”, *Int J Adv Manuf Technol*, 116, 1023-1039, 2021
- [48] Aghabeyki, F, **Mirnia, MJ**, Elyasi, M, “Cold and warm flaring of thin-walled titanium tube using single-point incremental forming”, *Int J Adv Manuf Technol*, 114, 3357-3376, 2021
- [47] Akbarzadeh, B, Gorji, H, Bakhshi Jooybari, M, Jamaati, R, **Mirnia, MJ**, “Investigation of mechanical and microstructural properties of pure copper processed by combined extrusion-equal channel angular pressing (C-Ex-ECAP)”, *Int J Adv Manuf Technol*, 113, 2175-2191, 2021
- [46] Sheikhpour, M, Hosseini-pour, SJ, **Mirnia, MJ**, “Analytical Determination of Strain Components Distribution and Curvature in the Direct Extrusion Process of Symmetric Sections Based on Riemann Mapping and Upper Bound Method”, *Modares Mechanical Engineering*, 21, 183-194, 2021 (in Persian)
- [45] Roein, M, Elyasi, M, **Mirnia, MJ**, “Introduction of a new method for bending of AISI 304L stainless steel micro-tubes with micro-wire mandrel”, *Journal of Manufacturing Processes*, 66, 27-38, 2021
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- [43] Soleimanifar, M, **Mirnia, MJ**, Elyasi, M, “Experimental and numerical study on the distribution of thickness and dimensional accuracy of AA 6061 in two-point incremental forming using flexible die”, *Iranian Journal of Manufacturing Engineering*, 7, 9-20, 2021 (in Persian)
- [42] Fallahati Naqibi, M, Elyasi, M, Jamshidi Aval, H, **Mirnia, MJ**, “Investigation of Friction-Stir Welding Parameters in the Fabrication of a 2-Layer Aluminum–Copper Pipe with Monolithic Interface”, *Trans Indian Inst Met*, 74, 285-300, 2021
- [41] Gholiyan, Y, Elyasi, M, **Mirnia, MJ**, “Study of fluid pressure on formability of metal sheets by using fixed and pulsating sheet hydroforming method”, *Iranian Journal of Marine Technology*, 8, 22-28, 2021 (in Persian)
- [40] Hejazi Alhossini, SM, Elyasi, M, **Mirnia, MJ**, “Effect of heat treatment on formability of AA6061 aluminum alloy in the sheet hydroforming process”, *Iranian Journal of Marine Technology*, 7, 39-50, 2020 (in Persian)
- [39] Gholizadeh, A, Elyasi, M, **Mirnia, MJ**, Jamaati, R, “Experimental Investigation of the Effect of Temperature on the Production of Bimetallic Workpiece Al-Cu Using Forward Extrusion Method”, *Modares Mechanical Engineering*, 20, 2355-2362, 2020 (in Persian)
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- [37] Akbarzadeh, B, Gorji, H, Bakhshi Jooybari, M, Jamaati, R, **Mirnia, MJ**, “Development of a new process for the severe plastic deformation of AA 1050 to improve the mechanical properties”, *Iranian Journal of Manufacturing Engineering*, 7, 19-29, 2020(in Persian)
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- [35] Talebi-Ghadikolaee, H, Moslemi Naeini, H, **Mirnia, MJ**, Mirzai, MA, Gorji, H, Alexandrov, S, “Study of the Effect of Calibration Procedure on the Accuracy of the Phenomenological Ductile Fracture Criteria in Sheet Metal Forming”, *Journal of Solid and Fluid Mechanics*, 10, 1-16, 2020 (in Persian)
- [34] Zahedi, A, Mollaei Dariani, B, **Mirnia, MJ**, "Failure Analysis in Single-Point Incremental Forming of Bilayer Sheet Using the Ductile Fracture Criterion", *Modares Mechanical Engineering*, 20, 1543-1554, 2020 (in Persian)
- [33] Panahi Liavoli, R, Gorji, H, Bakhshi Jooybari, M, **Mirnia, MJ**, “Investigation on Formability of Tailor-Welded Blanks in Incremental Forming”, *International Journal of Engineering (IJE), IJE TRANSACTIONS B: Applications*, 33, 906-915, 2020
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- [27] Talebi-Ghadikolaee, H, Moslemi Naeini, H, **Mirnia, MJ**, Mirzai, MA, Gorji, H, Alexandrov, S, “Fracture analysis on U-bending of AA6061 aluminum alloy sheet using phenomenological ductile fracture criteria”, *Thin-Walled Structures*, 148, 106566, 2020
- [26] Talebi-Ghadikolaee, H, Moslemi Naeini, H, **Mirnia, MJ**, Mirzai, MA, Alexandrov, S, Gorji, H, “Experimental and numerical investigation of failure during bending of AA6061 aluminum alloy sheet using the modified Mohr-Coulomb fracture criterion”, *Int J Adv Manuf Technol*, 105, 5217-5237, 2019
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- [24] Panahi Liavoli, R, Bakhshi-Jooybari, M, Gorji, H, **Mirnia, MJ**, “Determination of Process Window of St12 Steel Sheet in Single Point Incremental Forming of a Truncated Pyramid by Experimental Method”, *Modares Mechanical Engineering*, 19, 2551-2558, 2019 (in Persian)
- [23] Ghaferi, M, **Mirnia, MJ**, Elyasi, M, Jamshidi Aval, H, “Evaluation of different heat treatment cycles on improving single point incremental forming of AA6061 aluminum alloy”, *Int J Adv Manuf Technol*, 105, 83-100, 2019
- [22] Vahdani, M, **Mirnia, MJ**, Bakhshi-Jooybari, M, Gorji, H, “Electric hot incremental sheet forming of Ti-6Al-4V titanium, AA6061 aluminum, and DC01 steel sheets”, *Int J Adv Manuf Technol*, 103, 1199-1209, 2019
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- [20] Zahedi, A, Mollaei Dariani, B, **Mirnia, MJ**, "Experimental determination and numerical prediction of necking and fracture forming limit curves of laminated Al/Cu sheets using a damage plasticity model", *Int J Mech Sci*, 153-154, 341-358, 2019
- [19] Vahdani, M, **Mirnia, MJ**, Gorji, H, Bakhshi-Jooybari, M, “Experimental investigation of formability and surface finish into resistance single-point incremental forming of Ti-6Al-4V titanium alloy using Taguchi design”, *Trans Indian Inst Met*, 72, 1031-1041, 2019
- [18] Hadian, M, Baseri, H, **Mirnia, MJ**, Elyasi, M, “Experimental study of the effect of mechanical joining on energy absorption of bilayer tubes produced by flow forming process”, *Tabriz University Mechanical Engineering*, 48, 355-361, 2018 (in Persian)
- [17] Ebrahimzadeh, P, Baseri, H, **Mirnia, MJ**, “Formability of aluminum 5083 friction stir welded blank in two-point incremental forming process”, *Proc IMechE E J Process Mechanical Engineering*, 232, 267-280, 2018
- [16] Shamsari, M, **Mirnia, MJ**, Elyasi, M, Baseri, H, “Formability improvement in single point incremental forming of truncated cone using a two-stage hybrid deformation strategy”, *Int J Adv Manuf Technol*, 94, 2357-2368, 2018
- [15] **Mirnia, MJ**, Vahdani, M, Shamsari, M, “Ductile damage and deformation mechanics in multistage single point incremental forming”, *Int J Mech Sci*, 136, 396-412, 2018
- [14] Movahedinia, H, **Mirnia, MJ**, Elyasi, M, Baseri, H, “An investigation on flaring process of thin-walled tubes using multistage single point incremental forming”, *Int J Adv Manuf Technol*, 94, 867-880, 2018
- [13] Zahedi, A, Mollaei Dariani, B, **Mirnia, MJ**, "Experimental determination and numerical prediction of necking and fracture forming limit curves of 2024 aluminum alloy sheet using damage criterion ", *Modares Mechanical Engineering*, 17, 361-371, 2017 (in Persian)
- [12] Geran Gharakheyli, M, Gorji, H, Bakhshi, M, **Mirnia, MJ**, “Investigation of the effective parameters in the bulging process and obtaining Forming limit curve of the stainless steel tube by the GTN criterion”, *Modares Mechanical Engineering*, 17, 365-376, 2017 (in Persian)
- [11] **Mirnia, MJ**, Shamsari, M, “Numerical prediction of failure in single point incremental forming using a phenomenological ductile fracture criterion”, *J Mater Process Technol*, 244, 17-43, 2017

- [10] Asadian-Ardakani, MH, Morovvati, MR, **Mirnia, MJ**, Mollaei Dariani, B, " Theoretical and experimental investigation of deep drawing of tailor-welded IF steel blanks with non-uniform blank holder forces", *Proc IMechE B J Eng Manuf*, 231, 286-300, 2017
- [9] Nikdooz, AH, **Mirnia, MJ**, Baseri, H, "Study of formability of aluminum truncated pyramid in single-stage and two-stage incremental sheet forming", *Modares Mechanical Engineering*, 16, 210-220, 2016 (in Persian)
- [8] Bagherzadeh, S, **Mirnia, MJ**, Mollaei Darian, B, "Numerical and experimental investigations of hydro-mechanical deep drawing process of laminated aluminum/steel sheets", *J Manuf Process*, 18, 131-140, 2015
- [7] **Mirnia, MJ**, Mollaei Dariani, B, "An investigation on multistage incremental forming to control thinning in a truncated cone of an aluminum alloy sheet", *Modares Mechanical Engineering*, 14, 262-270, 2015 (in Persian)
- [6] **Mirnia, MJ**, Mollaei Dariani, B, Vanhove, H, Duflou, JR, "Thickness Improvement in Single Point Incremental Forming Deduced by Sequential Limit Analysis", *Int J Adv Manuf Technol*, 70, 2029-2041, 2014
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- [4] **Mirnia, MJ**, Dariani, BM, "An upper-bound prediction of tangential force in Single Point Incremental Forming", *Key Engineering Materials*, 504-506, 833-838, 2012
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- [1] **Mirnia, MJ**, Abrinia, K, Rastgoo, A, "An Investigation in the Deformation Zone of the ECAE Process by the Upper Bound Theorem", *Int J of Advanced Design and Manufacturing Technology*, 2, 1-8, 2009 (in Persian)