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SUMMARY

Over 23 years experience in engineering materials fabrication and characterization including Ceramic and Carbon matrix composites, Metal matrix and Polymer matrix composites and non –oxide ceramic reinforcements for various Industries and research centers. Highly experienced in fabrication and characterization of ceramic reinforcements and their composites for commercial applications.

EDUCATION BACKGROUND

1991-1996: Ph.D. in materials engineering from Iran university of Science and Technology (IUST) as top of the class graduate. Thesis performed on Carbon- carbon composites.
1987- 1990: M.Sc. in Selection & characterization of metallic materials from Tehran University (TU) as top of the class graduate. M.Sc. Thesis performed on Carbon fiber- aluminum matrix composites.
1983-1987: B.Sc. in Metallurgical engineering from Tehran University (TU) as top of the class graduate. B.Sc. research was on separation of heavy metals by active transport and I had the highest mark in the university

MAIN PROFESSIONAL AND INDUSTRIAL EXPERIENCE/RESPONSIBILITIES

1998- Present: Imam Khomeini International University (IKIU), *Assistant Professor*

- Lecturer of Advanced materials, engineering ceramics, Kinetics and many courses in materials science and engineering. Lead different researched projects.

1999-2008 Islamic republic of Iran Railway Company (freight & passenger wagons divisions)
Chief composite materials advisor

- Developed the composite brake shoes/Pads specifications and introduced direct cast Iron replacement composite brake shoes (LL) to Iranian railway.

2000-2005 Advanced materials development company (AMIDCO), Advisor

- This company is registered and managed by Industrial development and renovation organization (IDRO) and in this company feasibility study (FS) and business plan (BP) of advanced materials fabrication plants was prepared and revised.

1988-2004: Iranian Advanced materials research centers and Universities, *Lecturer, Research projects manager and Advisor*

- Managed many researches on Advanced materials includes Ceramic and metal matrix composites and ceramic fibers, etc.

1986-1987: Research complex of Djahad Ministry (now Mavadkaran Company) *Researcher*

- Researched on fabrication of thin pressure vessels.

MAIN INDUSTRIAL AND RESEARCH ACTIVITIES AND REPORTS

2006-Present: Fabrication of nanoparticles, nanofibers, and nanocomposites made from them
Imam Khomeini International University (IKIU)

- *Developed fabrication methods for production of silica, ZnO and Silver nanoparticles and fabrication of some polymer matrix nanocomposites reinforced with these reinforcements.*
- 2006-Present:** Optimization of Titanium Diboride (TiB₂) particles fabrication by Carbothermal method
Iran University of Science of Technology (IUST)
- Fabrication of Titanium Diboride (TiB₂) particles by Carbothermal method is quite old but the mechanism of this method not well known and purity and yield depends on local modifications of this

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process. In this project, Mechanism of TiB_2 formation is studied well and based on the results some modification in process is applied to improve product yield as well as purity.

2007- 2008: Fabrication of low cost carbon fibers from coal tar pitch precursors
Imam Khomeini International University (IKIU)

- Fabrication of low cost medium strength carbon fibers from different Iranian cheap coal tar pitches and characterize them are will be studied in this project.

2007: Fabrication of SiC base ceramics from silicon based Polymers
Imam Khomeini International University (IKIU)

- **Fabrication of polymer derived ceramics (PDC) is new field which many ceramics are fabricated by this method. In this respect, fabrication of SiC base ceramics from low cost silicon base polymers studied in this project.**

1999-2005: Fabrication of carbon fibers from PAN fiber precursors
Imam Khomeini International University (IKIU)

- Developed fabrication method and solve problems for production of High modulus-high strength carbon fibers there and after that researched on fabrication of low price – medium strength carbon fibers for infrastructures.

1999-2005: Fabrication and characterization of KK-type and LL-type composite brake shoes
Islamic Republic of Iran Railway Company

- Prepared railway composite brake shoes and pads specifications , as a result, all of Iranian railway KK-type brake shoes and pads are now produced in Iran
Researched on LL-type (Direct replacement of Cast Iron) composite brake shoes and prepared the specifications

2001: Fabrication and characterization of Pt-Al coatings on Ni-base superalloy substrates by PVD method

Islamic free university & IKIU

- In this project new method used for fabrication Of Pt-Al coatings on Gas turbine blades in order to overcome difficulties of routine methods. Good results achieved for fabrication of Pt-Al coatings by this method in laboratory scale.

2001: Characterization of Iranian coal tar pitch for fabrication of graphite bodies
IKIU

- Investigated on characteristics of Iranian coal tar Pitch during pyrolysis and developed characteristics of fabricated graphite bodies from it.

1998-2000: Fabrication of $MoSi_2-Al_2O_3$ -Aluminum composite powders by S.H.S. method and microwave activation,
IKIU

- Successfully researched on finding a cost justified way of producing $MoSi_2$ based composites through reduction of SiO_2 and MoO_3 by Aluminum.

1999: Fabrication of SiC/ Al_2O_3 composites by DIMOX (Lanxide) method
IKIU

- This method was adopted for the first time in Iran and small parts fabricated by this method.

1998-1999: characterization of carbon based super-capacitors (EDLC),
SAPTA Company

- Carbon based super capacitor materials analyzed and properties of carbon fiber based electrodes are characterized. After that the fabrication methods are proposed for these capacitors.

1990-1997: Fabrication of high temperature polymer matrix composite parts (1990-1997)
Iran University of science & technology (IUST)

- Large composite parts with Carbon-fiber or Glass fibers, Phenolic or Epoxy-Novalak resins and Special ceramic fillers fabricated and tested in this project.

1988-1997: Fabrication & characterization of carbon – carbon composites
Iran University of science & technology (IUST)

- Two-Dimensional Carbon –Carbon composites are fabricated and more that 10 fabrication parameters are analyzed. From these results, the optimized Carbon- Carbon composite fabricated with at least 25% mechanical properties improvement.

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1993-1996: Fabrication & characterization of D.S.C. anodes (RUO₂-TiO₂-SnO₂ coated Titanium plates)

Iran University of science & technology (IUST), Research deputy of Power (energy ministry) & Tehran University (TU)

- These anodes are characterized by physical and electrochemical methods. Based on the results, new coatings applied on them which improved corrosive and electrochemical properties of these anodes.

1988-1993: Fabrication of SiC (w) from rice husk
Tehran University (TU)

- Conversion of Iranian rice husk to SiC particulate and whiskers by pyrolysis method studied. By optimization of process SiC whisker content increased up to 20wt. %.

1988-1994: Fabrication & characterization of metal matrix composites (include carbon fiber/Aluminum or copper matrices and SiC (p) or Al₂O₃ (P)/ Aluminum matrix composites)
Islamic free university

- This was a government founded project which as a result, knows how for mass production of Copper matrix composites and laboratory production of Carbon fiber and SiC (p) Aluminum matrix composites found.

1986-1987: Fabrication and quality control of thin pressure vessels
Research complex of Djahad ministry (now Mavadkaran Company)

- Design, fabrication and quality control of thin pressure vessels established for the first time in Iran.

1984-1985: Separation Of heavy metals from waste waters by active transport
Tehran University (TU)

- In this project active transport in liquid membrane used for purification of factories waste water. By using this technique separation of heavy metals from waste water performed successfully in laboratory scale.

TEACHING RECORDS AND CAPABILITES

Lecturer of many material science and engineering courses, some of them are as follows:

2008-Present: Composite materials (M.Sc.)

2007-Present: Advanced properties of materials (M.Sc.)

2007-Present: Theory, fabrication and properties of Semiconductors (M.Sc.)

2003-Present: Dislocation Theory (M.Sc.)

2003-2005 : Structure of Ceramics (B.Sc.)

2000-present: Metal forming (B.Sc.)

2000-present: Non Ferrous extractive metallurgy (B.Sc.)

2000-present: New methods for materials characterization (B.Sc.)

2000-Present: Mechanical properties of materials ((B.Sc.)

1999-Present: Thermal properties of ceramics (B.Sc.)

1999- 2001: Refractory Materials (B.Sc.)

1998-Present: Electrical & optical properties of materials ((B.Sc.)

1998-Present: Advanced materials (B.Sc.)

1998-present: Engineering ceramics (B.Sc.)

1996-present: Non-oxide ceramics (M.Sc)

1993-1994: Theory of Diffusion (B.Sc.)

1990-Present: Kinetics in Materials engineering (B.Sc)

PUBLICATIONS

A. In English language:

1. "Fourier transform infrared study on types of acrylic fibers for production of carbon fibers", 2nd international conference and exhibition on composite materials and nano-structures, 5-7 Aug. 2008, Malaysia, *Paper C-08, P.24, 2008*

2. "The effect of commercial polyacrylonitrile fibers characterizations on the produced carbon fibers properties", *journal of materials processing technology 198, pp.60-67, 2008*

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3. Optimization of Carbon Fibers Made-up Commercial Polyacrylonitrile Fibers Using Screening Design Method, *Materials Science-Poland*, Vol. 25, No. 1, P.113, 2007
4. Fabrication of carbon fibres from wet-spun commercial polyacrylonitrile fibres, *Fibre Chemistry*, Vol. 38, No. 5, P.383, 2006
5. "Effect of thermal characteristics of commercial and special Polyacrylonitrile fibers on the fabrication of carbon fibers", *Material Science and Technology*, Vol.22, No.10, P.1235, 2006
6. "Fabrication of carbon fibres from wet-spun commercial polyacrylonitrile", *Fibre Chemistry*, Vol.38, No.5, P. 383, 2006
7. "Stabilization of Commercial Polyacrylonitrile Fibers for Fabrication of Low Cost Medium Strength Carbon Fibers", *e-polymers 2006*, No.001, www.epolymers.org
8. "The effect of processing parameters on the properties of carbon fibers fabricated from commercial dry spin acrylonitrile fiber precursors" *Proceeding of The Ninth Japan International SAMPE symposium Nov.29 – Dec.2, 2005, Tokyo, Japan, Paper S3-21*
9. "Feasibility study for fabrication of Carbon, Basalt & Glass fibers in Iran", *Proceeding of Polychar-13 Annual world forum on advanced materials*, 3-8 July 2005, Singapore, Symposium U, P.3
10. "The effect of Platinum and Aluminum deposition by sputtering-Ion beam techniques on the formation and microstructure of platinum aluminide coatings", *IUST International journal of engineering science*, Vol.16, No.4, P.53, 2005
11. "The effect of precursor content on the structure and properties of two dimensional carbon-carbon composites", *Proceeding of SAMPE'05 conference*, May 2005, Long Beach, California, USA
12. "Improving Carbon Fibers Quality Characteristic by Using Statistical Modeling", *International Journal of Applied Mathematics & Statistics (IJAMAS)*; Vol. 2, No. M04, 2004; 60-71
13. " Carbon fibers-polymer composites in human body", *Proceeding of European Material research society fall meeting*, Sep. 2004, Warsaw, Poland
14. "The effect of precursor content on the structure and properties of two dimensional carbon – carbon composites", *Proceedings of 8th Japan International SAMPE symposium*, Nov. 2003, Vol.2, P.853
15. "Fabrication of Al-Pt Coating on Ni-Based Superalloys by Sputtering-Ion Beam Technique under Argon Plasma" *J. Plasma Fusion Res. SERIES*, Vol.5 (2002).P.242
16. "The relation between microstructure and electrochemical behavior of mixed RuO₂ - TiO₂ coatings on titanium substrate for Cl₂ production", *13th. International power system conference (PCS98)*, Nov.1998, Tehran, Iran, [proc. Conf.], Niroo Chap. Company pub. P.33
17. "Evaluation of novalak resins as a precursor for fabrication of carbon- carbon composites", *Mat. Wiss. u. Werkstoff tech.*, 28, Sep. 1997
18. "The effect of graphitization on the mechanical properties of two dimensional carbon - carbon composites", *Mat. Wiss. u. Werkstoff tech.*, 28, 236-240, 1997
19. "The effect of chemical treatment on the production of SiC whisker from rice husk", *Proceeding of the 5th world seminar on heat treatment & surface engineering (IFHT95)*, Sep. 1995, Isfahan, Iran, P.855

B. In Persian language:

1. "Effect of Al₂O₃ content on mechanical and electrical properties of porcelain insulators which are used in electrical power transportation and distribution" 10th technical seminar of electrical power transportation line and 7th technical seminar of insulators, March 2009, Tehran, Iran
2. "Fabrication of carbon fibers from polyacrylonitrile fibers, their properties and applications", *Proceeding of the 6th Iran Ceramic society congress*, May 2007, Kray, Iran
3. "Fabrication of carbon fibers from commercial PAN fibers", *Proceeding of the 7th Iran metallurgical engineering society congress*, Oct. 2003, Tehran, Iran
4. "Characterization and improve properties of carbon fibers", *Proceeding of the second Iran metallurgical engineering society congress*, Oct. 1998, Tehran, Iran
5. "The effect of fabrication parameters on the production of SiC whisker from pyrolysis of rice husk", *proceeding of the Second ceramic congress*, Nov. 1995, Tehran, Iran
6. "The effect of chemical treatment (acid and basic) on the structure of rice husk and SiC whisker from it", *Proceeding of the first national congress on chemical engineering*, Nov. 1994, Tehran, Iran
7. "Fabrication of carbon fiber-Phenolic composites", *Proceeding of the first national congress on chemical engineering*, Nov. 1994, Tehran, Iran

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8. "The effect of surface treatment on the growth of copper on carbon fiber surfaces", *Proceeding of the second annual congress on mechanical engineering*, May 1994, Tehran, Iran
9. "The effect of surface treatment on the adhesive properties of carbon fiber surfaces", *Proceeding of the first seminar on Tribology & surface engineering*, May 1993, Isfahan, Iran
10. "New method for separation of heavy metals from industrial waste waters", *Proceeding of the second conference of industrial waste waters*, Sep. 1985, Tehran, Iran

I have published a book in Persian language. Which its title is:

- **Mechanical properties of materials, (May 2005, 278 pages)**

ACHIVEMENTS

1996: prize from president of Islamic republic of Iran and head of Cultural Revolution conceal in the honor of Ph.D. successes

1991: prize from president of Islamic republic of Iran and head of Cultural Revolution conceal in the honor of M.Sc successes.

REFERENCES

1. Prof. Farhad Golestani Fard, Iran university of Science and Technology, Narmak, Tehran , Iran
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