



# Hassan Niknafs

## *Curriculum Vitæ*

### Education

- 1994 **PhD in Mechanical Engineering**, *University of Akron, Akron, Ohio, USA.*  
With Emphasis on Algorithm Development for Highly Convective Flow Fields related to Heat Transfer and Fluid Dynamic Applications
- 1979 **MSc in Mechanical Engineering**, *Youngstown State University, Youngstown, Ohio, USA.*
- 1976 **BSc in Chemical Engineering**, *Shiraz University (former Pahlavi University), Shiraz, Iran.*

### Experience

#### Academic Appointments and Service

- 2015–Present **Rector**, KHAZAR UNIVERSITY, Baku, Azerbaijan.
- 2013–2015 **Dean of School of Engineering and Applied Sciences**, KHAZAR UNIVERSITY, Baku, Azerbaijan.
- 2001–2012 **Part-Time Lecturer**, UNIVERSITY OF AKRON, Ohio, USA.  
Teaching at College of Engineering and Applied Mathematics,

#### Courses:

- Fluid Mechanics
- Heat Transfer
- Applied Calculus for Business Applications
- Precalculus
- Calculus

- 1986–1988 **Teaching Assistant**, MECHANICAL ENGINEERING DEPARTMENT OF UNIVERSITY OF AKRON, Ohio, USA.

Teaching at Mechanical Engineering Department and supervision of related labs for junior and senior undergraduate students,

#### Courses:

- Fluid Dynamics
- Heat Transfer

## Technical Appointments and Service

- 1988–2013 **Research and Development Engineer**, SAINT-GOBAIN NORPRO CORPORATION, PREVIOUSLY KNOWN AS THE NORTON CHEMICAL PROCESS PRODUCTS CORPORATION, Stwo, Ohio, USA.
- New product development
  - Supporting marketing for promoting the new products by giving technical presentations to relevant national and international customers
  - Troubleshooting of the engineering systems
  - Simulation and analysis of flow behavior, heat transfer, and two-phase flows for projects involving gas purification, distillation columns, energy storage systems, and heat sink columns using Fluent, a CFD package
  - Design and modeling of the Thermal Energy Systems (TES)
- 1983–1985 **Project Engineer**, NATIONAL IRANIAN OIL COMPANY (N.I.O.C), Tehran, Iran. Mechanical construction, hydraulic pressure testing, piping and instrumentation, x-ray interpretation of the welds, and insulation of the following project:
- Crude oil product pipeline from Rey to Rasht
  - Crude oil product pipeline from Shahrood to Mashahd
  - Pump-stations for crude oil product transport from Persian Gulf to Rey in Tehran
  - Pump-stations for crude oil products in Azerbaijan region from Tabriz to Urumieh
- 1980–1982 **Process Engineer**, SHIRAZ CEMENT FACTORY, Shiraz, Iran.  
Supervision of grinding operation, calcination using rotary kilns, and quality control in Analytical Chemistry Lab

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## Publications

- 1991 International Journal of Computers and Fluids, Vol. 19, No. 1, 1991, P. 141-154  
Title: *Sharp monotonic resolution of discontinuities without clipping of narrow extrema*
- 1991 Computational Fluid Dynamics Symposium on Aeropropulsion, NASA, Lewis Research Center, USA; p 227-240  
Title: *Cost-effective accurate coarse-grid method for highly convective multidimensional unsteady flows*
- 1990 Technical Report, NASA, Lewis Research Center, USA; NASA-TM-102538, ICOMP-90-09, E-5336, NAS 1.15:102538  
Title: *A cost-effective strategy for nonoscillatory convection without clipping*
- 1989 International Conference on Numerical Methods in Fluid Dynamics, Williamsburg, VA, USA; 11th; June 27-July 1, 1988  
Title: *Universal limiter for high order explicit conservative advection schemes*

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## Patents

- 2014 Title: *Regenerator*  
Abstract: The present invention relates to a regenerator including a packed bed of energy storage elements made of a material having the following chemical analysis  
Application No.: 20140158318

- 2014 Title: *Structured Media and Methods for Thermal Energy Storage*  
Abstract: Thermal energy storage articles, systems, and methods for making and using such thermal energy storage articles and systems  
Application No.: 20140074314
- 2014 Title: *Low Void Fraction Thermal Storage Articles and Methods*  
Abstract: Low void fraction thermal energy storage articles, systems, and methods for making and using such thermal energy storage articles and systems  
Application No.: 20140000835
- 2012 Title: *Vessel Containing Fluid Distribution Media*  
Abstract: A vessel comprising a bed of randomly oriented ceramic media having fluid distribution channels incorporated in the outer surface of the media is disclosed  
Application No.: 8282890
- 2011 Title: *Vessel Containing Fluid Distribution Media*  
Abstract: A chemical processing apparatus that utilizes randomly oriented ceramic packing elements having at least three openings therethrough that accommodate feedstock with combustible and/or noncombustible matter that accumulates in the openings is described  
Application No.: 7862013
- 2010 Title: *Thermal Energy Storage Apparatus*  
Abstract: A thermal energy storage apparatus capable of storing large quantities of heat uses a plurality of energy storage zones having essentially the same thermal energy storage capacity per zone  
Application No.: 20100287933
- 2010 Title: *Vessel Containing Fluid Distribution Media*  
Abstract: A vessel comprising a bed of randomly oriented ceramic media having fluid distribution channels incorporated in the outer surface of the media is disclosed  
Application No.: 20100209315
- 2010 Title: *Packing Elements for Mass Transfer Applications*  
Abstract: The invention provides novel ceramic mass transfer packing elements with physical characteristics that maximize efficiency of mass transfer and minimize pressure drop when randomly dumped in a chemical reactor  
Application No.: 7775507
- 2009 Title: *Method for Forming a System for Treatment of a Flowing Material*  
Abstract: A system for treatment of one or more flowing materials includes a support bed (32) comprising a plurality of support elements (34)  
Application No.: 20090283479
- 2009 Title: *Bed Support Media*  
Abstract: A system for treatment of one or more flowing materials includes a support bed (32) comprising a plurality of support elements (34)  
Application No.: 7566428
- 2009 Title: *Packing Elements for Mass Transfer Applications*  
Abstract: The invention provides novel ceramic mass transfer packing elements with physical characteristics that maximize efficiency of mass transfer and minimize pressure drop when randomly dumped in a chemical reactor  
Application No.: 20090115077

- 2008 Title: *Packing Elements for Mass Transfer Applications*  
Abstract: This invention provides a packing element for use in a chemical processing apparatus housing a mass transfer reaction  
Application No.: 20080164625
- 2008 Title: *Packing Elements for Mass Transfer Applications*  
Abstract: A chemical processing apparatus that utilizes randomly oriented ceramic packing elements having at least three openings therethrough that accommodate feedstock with combustible and/or noncombustible matter that accumulates in the openings is described  
Application No.: 20080093751
- 2007 Title: *Ceramic Packing Element*  
Abstract: The invention provides an improved ceramic packing element (1, 6, 8) suited to use as a bed limiter having a generally uniform cross-section in the length (l) direction with the basic shape of a bow-tie and having a plurality of through passages (5) parallel to the length dimension (L)  
Application No.: 7246795
- 2005 Title: *Ceramic Packing Element*  
Abstract: The invention provides an improved ceramic packing element having the basic shape of a cylinder with an aspect ratio, defined by the diameter to length dimensions that is from 2.7 to 4.5  
Application No.: 6889963
- 2004 Title: *Ceramic Packing Element With Enlarged Fluid Flow Passages*  
Abstract: A ceramic packing element (1) has a polygonal structure (2) with a plane of symmetry in a direction defining a length (L) of the element and a greatest dimension (D) perpendicular to the length defining a diameter of the element  
Application No.: 20040170804
- 2004 Title: *Ceramic Packing Element for Mass Transfer Applications*  
Abstract: A ceramic packing element (10) has an essentially cylindrical structure (12) with a plane of symmetry in a direction defining a length (L) of the element and a greatest dimension (D) perpendicular to the length defining a diameter of the element  
Application No.: 20040166284
- 2004 Title: *Ceramic Packing Element*  
Abstract: The invention provides an improved ceramic packing element having the basic shape of a cylinder with an aspect ratio, defined by the diameter to length dimensions that is from 2.7 to 4.5  
Application No.: 20040166284
- 2003 Title: *Ceramic Packing Element*  
Abstract: The invention provides an improved ceramic bed limiter packing element having a uniform cross-section in the length direction with the basic shape of a bow-tie and having a plurality of through passages parallel to the length dimension  
Application No.: 20030232172
- 2003 Title: *Ceramic Packing Element*  
Abstract: The invention provides an improved ceramic packing element having the basic shape of a cylinder with an aspect ratio, defined by the diameter to length dimensions that is from 2.7 to 4.5  
Application No.: 20030161992

- 2003 Title: *Ceramic Packing Element*  
Abstract: The invention provides an improved ceramic packing element having the basic shape of a cylinder with an aspect ratio, defined by the diameter to length dimensions that is from 2.7 to 4.5  
Application No.: 20030160342
- 2003 Title: *Plastic Random Packing Element*  
Abstract: The invention provides a novel improved plastic packing element having the basic shape of a polygon with arches formed around the periphery by deforming the edge area in one direction and an area axially within the edge area to form arches projecting in the opposite direction and providing an axially located aperture  
Application No.: 20030146524
- 2001 Title: *Packing Element*  
Application No.: D445029
- 2000 Title: *Random Packing Element*  
Abstract: The invention provides a novel improved packing element having the basic shape of a polygon with arches formed around the periphery by deforming the edge area in one direction and an area axially within the edge area to form arches projecting in the opposite direction and providing an axially located aperture  
Application No.: 6387534
- 1997 Title: *Mass Transfer Packing Element*  
Application No.: D354687
- 1998 Title: *Horizontal Regenerative Thermal Oxidizer Unit*  
Abstract: A regenerative thermal oxidizer unit comprising two heat regenerator units in which a gas to be purified from VOCs passes through the units in an essentially horizontal direction  
Application No.: 5770162
- 1995 Title: *Structured Packing Element*  
Application No.: D354687

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## Languages

- Persian **Native**  
Azerbaijani **Mother tongue**  
English **Fluent**