





PERSONAL INFORMATION

Shahab Zangeneh

-  Department of Materials and Textile Engineering, Razi University, Iran.
-  +98-918-385-3445
-  Shzangeneh@razi.ac.ir
-  [Google scholar](#) [LinkedIn](#)

PERSONAL PROFILE

I'm working as an assistance professor at [Razi University](#). This job has provided me diverse knowledge and experience in fitness-for-service (FFS) assessment, failure analysis and microstructural characterizations. My previous experience during last decade has led to **55** peer-reviewed articles ([Google scholar](#)). In addition, I'm consulting engineer within the Mechanical & Structural Engineering Team of Fan Foolad Co. I conduct fitness-for-service (FFS) evaluations (Level 3 assessments using Finite Element Analysis (FEA) simulation methods) in accordance with API 579-1/ASME FFS-1 to extend equipment life as well as analysis of fixed equipment to evaluate mechanical integrity and improve availability.

PROFESSIONAL EXPERIENCE

2013-Present

Assistance Professor

Department of Materials and Textile Engineering, Razi University, Iran.

In the last 10 years, some highlight projects are summarized as follows:

- **Fitness-For-Service (FFS) assessment**
 1. Leak rate calculation for leak-before-break (LBB) analysis of a subsea pipeline by Finite Element Analysis
 2. Fitness for service (FFS) assessment of a dented subsea pipeline using Finite Element Analysis
 3. Fitness for service (FFS) assessment of local thin area (LTA) in a pipeline through Finite Element Analysis [References](#)
 4. Fitness for service (FFS) assessment of hydrogen-induced cracking (HIC) in a pipeline through Finite Element Analysis [References](#)
 5. Finite Element Modelling for Creep Failure Prediction and Fitness for service (FFS) assessment of Superheater Tubes [References](#)
 6. Working on level 3 Fitness for service (FFS) assessment through Finite Element Analysis to assess HIC damage of pressurized vessels
 7. Fitness for service (FFS) assessment through Finite Element Analysis of demineralized-water (DM) pipeline weld crack [References](#)
 8. Fitness for service (FFS) assessment of a pressure vessel subjected to fire damage in a refinery unit [References](#)
 9. Fitness for service (FFS) assessment through Finite Element Analysis to assess bucking during PWHT in a pressurized tower
 10. Fitness for service (FFS) assessment through Finite Element Analysis to assess fatigue life estimation of a water storage tank
 11. Creep-fatigue damage evaluation of a process reactor using ASME-NH code methodology
- **Failure analysis and Remaining life estimation**
 1. Work on industrial project entitled "Failure investigation of superheater tubes due to thinning in a Bistoon power plant". The objective was to understand the reason of failure before estimated time

2. Work on industrial project entitled "Failure investigation of a deaerating feedwater heater in a power plant". The objective was to understand the reason of failure due to thickness thinning [\[References\]](#)
3. Work on industrial project entitled "Evaluation of hydrogen damage in a fire tube using microstructure/mechanical properties studies". The objective was to understand the effect of hydrogen diffusion on HIC damage [\[References\]](#)
4. Work on industrial project entitled "Thermal/stress analysis of a failed fire-tube heater treater" [\[References\]](#)
5. Work on industrial project "A Comprehensive Analysis of Premature Failure in a Cobalt-Based Superalloy X-45 Gas Turbine Vane" [\[References\]](#)
6. Work on industrial project "Fracture failure analysis of AISI 304L stainless steel shaft" [\[References\]](#)

2010-2013

- <http://www.razi.ac.ir>

Research Assistant

Department of Materials and Metallurgical Engineering, Amirkabir University of Technology, Tehran, Iran.

1. Work on project "Analysis of microstructure and nano-scaled carbide formation in Co-28Cr-5Mo-0.3C alloy by mechanical and thermal treatments in order to improve wear properties" Work on project "damage induced by impacting objects" [\[References\]](#) [\[1\]](#) [\[2\]](#) [\[3\]](#)
 2. Mechanical test and Fractography of metallic materials for industrial applications.
 3. Metallography, sample preparation and advanced characterization techniques, TEM, SEM, etc.
- <http://aut.ac.ir/aut/>

2008-2010

Research Assistant

School of Metallurgy & Materials Engineering, College of Engineering, University of Tehran

1. Work on project "Investigation of microstructure degradation and failure mechanisms in cobalt-based superalloy gas turbine nozzle" [\[References\]](#)
2. Management of research group laboratories, technical equipment maintenance, safety requirements and research adviser to undergraduate students

- <https://ut.ac.ir/en>

EDUCATION

2011-2015

Ph.D. in Materials and Metallurgical Engineering

Department of Materials and Metallurgical Engineering, Amirkabir University of Technology, Tehran, Iran.

- <http://aut.ac.ir/aut/>

2007-2010

M.Sc. in Materials Science and Engineering

School of Metallurgy & Materials Engineering, College of Engineering, University of Tehran, Tehran, Iran.

- <https://ut.ac.ir/en>

2002-2007

B.Sc. in Materials Science and Engineering

Department of Materials Engineering, International University of Imam Khomeini, Qazvin, Iran.

- <http://ikiu.ac.ir/en/>

TECHNICAL SKILLS

Materials
Characterization

I am able to skilfully operate Transmission electron microscopy (TEM, different modes including bright field, dark field, two-beam conditions), Scanning electron microscopy (SEM, SE, BSE and EDS), X-ray Diffraction (XRD, microtexture, phase analysis, lattice strain, crystallite size, etc.).

Mechanical Tests

Extensive experience in mechanical properties of materials and in the following mechanical tests: Tensile, Compression, Bending, Macro and micro hardness, Nano indentation, Wear, Creep, Fatigue, High temperature tensile, etc.

Computer Skills

1. Engineering software, Expert: Abaqus, Clemex (Image analysis), X'Pert (Applications for XRD).
2. Engineering software, Basics: Maple, Catia V5, SolidWorks.
3. General Software: Microsoft Office (Word, Excel, PowerPoint), Origin, Endnote, SigmaPlot.

PUBLICATIONS

Highlighted Journal papers

- Sh. Zangeneh**, H.R. Lashgari, H.R. Sharifi: Fitness-for-Service Assessment and Failure Analysis of AISI 304 Demineralized-water (DM) Pipeline Weld Crack. *Engineering Failure Analysis* 10/2019;, DOI:10.1016/j.engfailanal.2019.104210
- S. Fathi, **Sh. Zangeneh**, M. Pahlavani: A Comprehensive Analysis of Premature Failure in a Cobalt-Based Superalloy X-45 Gas Turbine Vane. *Journal of Failure Analysis and Prevention* 10/2019;, DOI:10.1007/s11668-019-00729-4
- M. Saghafi, S. A. Hosseini, **Sh. Zangeneh**, A. H. Moghani, V. Salarvand, S. Vahedi, Sh. Mohajerzadeh: Charge storage properties of mixed ternary transition metal ferrites MZnFe oxides (M = Al, Mg, Cu, Fe, Ni) prepared by hydrothermal method. *10/2019; 1(10)*., DOI:10.1007/s42452-019-1355-x
- Shahab Zangeneh**, Ersoy Erisir, Mahmoud Abbasi, Ali Ramazani: Evaluation of the Aging Effect on the Microstructure of Co-28Cr-6Mo-0.3C Alloy: Experimental Characterization and Computational Thermodynamics. *Metals - Open Access Metallurgy Journal* 05/2019; 9(5):581-594., DOI:10.3390/met9050581
- M. Saghafi, **Sh. Zangeneh**: Zn-Co oxide electrodes with excellent capacitive behavior for using supercapacitor application. *Current Applied Physics* 04/2019; 19(6)., DOI:10.1016/j.cap.2019.04.001
- S.H. Zangeneh**, R. Bakhtiari: Failure investigation of a deaerating feed-water heater in a power plant. *Engineering Failure Analysis* 03/2019; 101., DOI:10.1016/j.engfailanal.2019.03.007
- F. Z. Hassani, M. Ketabchi, **Sh. Zangeneh**, S. Bruschi: Grain Refinement of Co-Cr-Mo-C Through Plastic Deformation Followed by Reversion of Lamellar Eutectoid Structure. *Journal of Materials Engineering and Performance* 01/2019;, DOI:10.1007/s11665-018-3787-7
- H R Lashgari, C Kong, M Asnavandi, **Sh Zangeneh**: The effect of friction stir processing (FSP) on the microstructure, nanomechanical and corrosion properties of low carbon CoCr28Mo5 alloy. *Surface and Coatings Technology* 11/2018; 354:390-404., DOI:10.1016/j.surfcoat.2018.09.039
- R. Bakhtiari, **Sh. Zangeneh**: Evaluation of hydrogen damage in a fire tube using microstructure/mechanical properties studies. *Engineering Failure Analysis* 03/2018; 90., DOI:10.1016/j.engfailanal.2018.03.030
- S.H. Seyed Ebrahimi, K. Dehghani, J. Aghazadeh, M.B. Ghasemian, **Sh. Zangeneh**: Investigation on microstructure and mechanical properties of Al/Al-Zn-Mg-Cu laminated composite fabricated by accumulative roll bonding (ARB) process. *Materials Science and Engineering A* 02/2018; 718., DOI:10.1016/j.msea.2018.01.130
- Sh. Zangeneh**, H.R. Lashgari, M. Asnavandi: The effect of long-term service exposure on the stability of carbides in Co-Cr-Ni-W (X-45) superalloy. *Engineering Failure Analysis* 12/2017; 84., DOI:10.1016/j.engfailanal.2017.11.018
- H. K. Farahani, M. Ketabchi, **Sh. Zangeneh**: Determination of Johnson-Cook Plasticity Model Parameters for Inconel718. *Journal of Materials Engineering and Performance* 10/2017;, DOI:10.1007/s11665-017-2990-2
- Sh. Zangeneh**, H.R. Lashgari, H.F. Lopez, H.K. Farahani: Microstructural characterization of TIG surface treating in Co-Cr-Mo-C alloy. *Materials Characterization* 08/2017; 132., DOI:10.1016/j.matchar.2017.08.017
- R. Bakhtiari, **S.H. Zangeneh**, M. Bakhtiari Fotouh, S.M. Jamshidi, A. Shafeie: Fitness for service assessment of a pressure vessel subjected to fire damage in a refinery unit. *Engineering Failure Analysis* 07/2017; 80., DOI:10.1016/j.engfailanal.2017.07.020
- Hamed K Farahani, Mostafa Ketabchi, **Shahab Zangeneh**: Mechanical characterization of craters induced by impacting foreign objects on Inconel718. *International Journal of Damage Mechanics* 06/2017;, DOI:10.1177/1056789517714604
- H. K. Farahani, M. Ketabchi, **Sh. Zangeneh**, M. Hosseini: Characterization of Damage Induced by Impacting Objects in Udimet-500 Alloy. *Journal of Failure Analysis and Prevention* 06/2016; 16(4)., DOI:10.1007/s11668-016-0129-7
- S. H. Seyed Ebrahimi, J. Aghazadeh, K. Dehghani, M. Emamy, **Sh. Zangeneh**: The effect of Al-5Ti-1B on the microstructure, hardness and tensile properties of a new Zn rich aluminium alloy. *Materials Science and Engineering A* 03/2015; 636., DOI:10.1016/j.msea.2015.03.015
- Ali Kalaki, mostafa ketabchi, **shahab zangeneh**: Fracture Surface Analysis in Thixojoined Tool Steels. *02/2014; 2014(3)*., DOI:10.1155/2014/489487
- Sh. Zangeneh**, M. Ketabchi, H.F. Lopez: Nanoscale carbide precipitation in Co-28Cr-5Mo-0.3C implant alloy during martensite transformation. *Materials Letters* 02/2014; 116:188-190., DOI:10.1016/j.matlet.2013.11.018
- Sh. Zangeneh**, M. Ketabchi, A. Kalaki: Fracture failure analysis of AISI 304L stainless steel shaft. *Engineering Failure Analysis* 10/2013; 36., DOI:10.1016/j.engfailanal.2013.09.013

- R Bahrami, H Omidvar, **Sh Zangeneh**, M Ketabchi: Solid state diffusion bonding of Ti–6Al–4V and Co–28Cr–5Mo–0.3C alloys. *Materials Science and Technology* 08/2013; 29(8):908-912., DOI:10.1179/1743284713Y.0000000219
- Shahab Zangeneh**: Solid state diffusion bonding of Ti–6Al–4V and Co–28Cr–5Mo–0.3C alloys. *Journal of Materials Science and Technology -Shenyang-* 08/2013; 29(8):908-912.
- Sh. Zangeneh**, M. Ketabchi: Grain refinement by pearlitic-type constituents in Co–28Cr–5Mo–0.3C alloy. *Materials Letters* 03/2013; 94:206–209., DOI:10.1016/j.matlet.2012.11.074
- Shahab Zangeneh**, Hamid Reza Lashgari, Abdolreza Roshani: Microstructure and tribological characteristics of aged Co–28Cr–5Mo–0.3C alloy. *Materials and Design* 01/2012; 37:292-303., DOI:10.1016/j.matdes.2011.12.041
- H. R. Lashgari, **Sh. Zangeneh**, M. Ketabchi: Isothermal aging effect on the microstructure and dry sliding wear behavior of Co–28Cr–5Mo–0.3C alloy. *Journal of Materials Science* 11/2011; 46(22), DOI:10.1007/s10853-011-5686-2
- Abbas-ali Malekbarni, **Shahab Zangeneh**, Abdolreza Roshani: Assessment of premature failure in a first stage gas turbine nozzle. *Engineering Failure Analysis* 07/2011; 18(5):1262-1271., DOI:10.1016/j.engfailanal.2011.03.011
- H. R. Lashgari, **Sh. Zangeneh**, H. Shahmir, M. Saghafi, M. Emary: Heat treatment effect on the microstructure, tensile properties and dry sliding wear behavior of A356–10%B4C cast composites. *Materials and Design* 10/2010; 31(9):4414-4422., DOI:10.1016/j.matdes.2010.04.034
- Sh. Zangeneh**, H.R. Lashgari, M. Saghafi, M. Karshenas: Effect of isothermal aging on the microstructural evolution of Co–Cr–Mo–C alloy. *Materials Science and Engineering A* 09/2010; 527(24-25):6494-6500., DOI:10.1016/j.msea.2010.06.081
- Sh. Zangeneh**, H. Farhangi: Influence of service-induced microstructural changes on the failure of a cobalt-based superalloy first stage nozzle. *Materials and Design* 08/2010; 31(7):3504-3511., DOI:10.1016/j.matdes.2010.02.021
- H.R. Lashgari, **Sh. Zangeneh**, F. Hasanabadi, M. Saghafi: Microstructural evolution during isothermal aging and strain-induced transformation followed by isothermal aging in Co-Cr-Mo-C alloy: A comparative study. *Materials Science and Engineering A* 06/2010; 527(16):4082-4091., DOI:10.1016/j.msea.2010.03.018
- Sh. Zangeneh**, H. Farhangi, H.R. Lashgari: Rejuvenation of degraded first stage gas turbine nozzle by heat treatment. *Journal of Alloys and Compounds* 05/2010; 497(1):360-368., DOI:10.1016/j.jallcom.2010.03.070

CO-OPERATION WITH COMPANIES

2010-Present

Z-Subsea, England
 its tekno sains, Indonesia
 Bisotun Management Company of Electrical Force Production, Iran
 Iranian Central Oil Field Company (ICOFC), Iran
 Kermanshah Oil Refinery Company (KORC), Iran

LANGUAGE

Persian (Native), Kurdish (Native), English (Fluent)

RESEARCH INTERESTS

Fitness-For-Service (FFS) assessment, Phase transformation in high temperature components, Material processing simulation, Advanced fracture mechanic (ABAQUS).

REFERENCES

References will be available upon your request