

Abul Fazal M. Arif

Professor of Mechanical Engineering
Director, ME Stress Analysis Laboratory
King Fahd University of Petroleum & Minerals

Contact

Office: Building 22, Room 234

Mailing address: 1467 KFUPM, Dhahran 31261, Saudi Arabia

Phone: +966-3-860-2579 (Office);

Email: afmarif@kfupm.edu.sa

Research Interests

Applied Computational Mechanics; Applications of Finite Element Method in Multi-physics Problems; Laser assisted manufacturing and surface modification processes; Metal forming and other advanced manufacturing processes; multi-physics modeling of photovoltaic solar system; non-dimensional finite element analysis; and micro-mechanical modeling of coatings.

Teaching Interests

Materials and Manufacturing Processes (ME215, ME206)

Machine Design (ME307, ME308)

Mechanics of Materials (ME487)

Linear and Nonlinear Finite Element Analysis (ME489, ME543, ME586, ME590)

Plasticity and metal forming processes (ME555, ME580)

Education

1985, Bachelor of Engineering in Mechanical Engineering,

Department of Mechanical Engineering

NED University of Engineering & Technology, Karachi, Pakistan

1988, Master of Science, CAD/CAM/CAE

Department of Mechanical Engineering

University of Minnesota, Minneapolis, USA

1991, PhD, Computational Mechanics

Department of Mechanical Engineering

University of Minnesota, Minneapolis, USA

Honors and Awards

- 2011, Best Compliant Mechanism Paper Award at the ASME 2011 International Design Engineering Technical Conferences & Computers and Information
- 2010 Best Research Project Award for 2009-2010, KFUPM.
- 2009 Distinguished Teacher Award for 2008-2009, KFUPM
- 2008 Distinguished Research Award for 2007-2008, KFUPM
- 2007 College of Engineering Sciences Teaching Award for 2006-2007, KFUPM.
- 2006 Donald Julius Groen Prize for 2006, Institution of Mechanical Engineers (IMechE), Manufacturing Industries Division, UK
- 2006 College of Engineering Sciences Research Award for 2005-2006, KFUPM.
- 2004 College of Engineering Sciences Research Award for 2003-2004, KFUPM.
- 2002 Distinguished Teaching and Advising Award for 2001-2002, KFUPM
- 1985 Graduate Study Scholarship for MS and PhD, Government of Pakistan.

Employment History

March 2010-present:

Professor, Mechanical Engineering, KFUPM, Dhahran, Saudi Arabia.

March 2004-March 2010:

Associate Professor, Mechanical Engineering, KFUPM, Dhahran, Saudi Arabia.

September 1998-March 2004:

Assistant Professor, Mechanical Engineering, KFUPM, Dhahran, Saudi Arabia.

May 1996-August 1998:

Assistant Professor, Faculty of Mechanical Engineering, GIK Institute of Engineering Science and Technology, Topi, Pakistan.

May 1995-August 1996:

Chief Engineer, Engine Systems Ltd., Karachi, Pakistan (A joint venture with Cummins Diesel Co., USA).

August 1992-May 1995:

Manager (Product Development), Trans Mobile Ltd., Karachi, Pakistan.

September 1991-August 1992:

Senior Engineer, SUPARCO, Karachi, Pakistan.

Professional Services (Selected)

ASME/ABET Program Evaluator for Mechanical Engineering Programs, 2011-present.

Member, KFUPM ABET Steering Committee: September 2009-present

Chairman, ME Faculty Search Committee, September 2010-present.

Director, ME Stress Analysis Laboratory, September 2010-present

Co-Lead Technical Editor, theme issue on 'Modeling of Metal Forming Processes'
AJSE, 30 (1C), 2005.

Member, Editorial Board, Journal of Manufacturing Engineering, Dec 2006-present.

<http://www.smeindia.org/Journal/index.php>

Member, International Editorial Advisory Board, NED University Journal of
Engineering Research, <http://www.neduet.edu.pk/NED-Journal/ediBoard.html>

Memberships

American Society of Mechanical Engineers

Pakistan Engineering Council

Teaching

Teaching Overview

Since joining academia in 1996, he taught eleven undergraduate courses and four graduate courses. The undergraduate courses covered all the levels from freshmen to senior years. These courses deal with applied mechanics, design, materials and manufacturing. In addition, he has proposed and/or developed three new undergraduate courses and four graduate courses.

Courses Taught

At KFUPM, Saudi Arabia.	
ME206: Manufacturing Processes I	ME543: Nonlinear Finite Element Analysis
ME215: Materials Science for ME	ME555: Plasticity
ME307: Machine Design I	ME580: Principles of metal forming
ME308: Machine Design II	ME586: FEA in Metal Forming
ME487: Mechanics of Materials	ME590: FEA for Large Deformation Problems
ME489: FEA in Mechanical Design	
At other educational institutions	
Engineering Design	Statics
Manufacturing Technology	Engineering Drawing / CAD
Automobile Engineering	Machine design

Course Development at KFUPM

[1] ME 489: FEA in Mechanical Design, (*developed and first time offered*)

[2] ME 543: Nonlinear Finite Element Analysis, (*proposed, developed and first time offered*)

- [3] ME 555: Plasticity, *(developed and first time offered)*
- [4] ME 580: Principles of Metal Forming, *(developed and first time offered)*
- [5] ME 586: FEA in Metal Forming, *(proposed, developed and first time offered)*
- [6] ME 590: FEA for Large Deformation Problems, *(proposed, developed and first time offered)*

Participation in Continuing Education Activities

- [1] Evaluating Heat Exchanger Design and Installation (MEX 210), for Saudi Aramco Engineers, KFUPM, Saudi Arabia (2012)
- [2] Introduction to Process Control for Saudi Aramco Engineers, KFUPM, Saudi Arabia (2008-2012)
- [3] Applications of Codes and Standards in Design, Operation, and Maintenance, KFUPM, Saudi Arabia (2006).
- [4] Mechanical Design, Analysis and Assessment of Storage Tanks and Piping Systems, KFUPM, Saudi Arabia (2004).
- [5] Applications of Finite Element Analysis in Mechanical Engineering, KFUPM, Saudi Arabia (2003).
- [6] Techniques and Practical Applications of Stress Analysis, KFUPM, Saudi Arabia (2001-2003).
- [7] Product Development Solutions for Design-Through-Manufacturing, GIK Institute, Pakistan (1998).

Senior Design Projects (Selected titles)

- [1] Design of composite repair for metallic pipes (2013)
- [2] Design and optimization of photovoltaic panel frame (2012).
- [3] Heat exchanger design for photovoltaic panel cooling (2011)
- [4] Design on impact test equipment for composite pipes (2011).
- [5] Design of an experimental setup for thermal evaluation of heat sinks (2010).
- [6] Optimal design of fins used in electronic packing (2009)
- [7] Effect of geometry on gas nitriding of parts (2007)
- [8] Optimal design of pipe repair sleeve (2007)
- [9] Design analysis of a pipe repair sleeve (2006)
- [10] Design aspect of wire drawing process and dies (2004)
- [11] Design of hot aluminum extrusion dies (2004)
- [12] Design of a heavy duty trolley (2003)
- [13] Petrochemical storage tank design using fea (2003)
- [14] Design on a vertical mixer (2002)
- [15] Design of a flat bed storage tank (2002).
- [16] Improvement in shear blade design used in aluminum extrusion industry (2002)
- [17] Laser applications for the surface treatment of mechanical components (2001)
- [18] Effects of tool geometry on metal extrusion pressure and defects (2001)

- [19] Development of a cad tool for a mechanical joint design (2000)
- [20] Development of a cad tool for brake and clutch design (2000).
- [21] Cad tool for the design of gear devices with spur and helical gears (1999)
- [22] Modeling and simulation of diesel engine combustion. (1997)
- [23] Design and simulation of truck chassis frame using fem. (1997))
- [24] Frame joint analysis under different loading conditions using fem. (1998)
- [25] Optimization of automobile brake drum using fem.(1998)

Research

Research Overview

The research activities of Prof. Arif and his group are in the broad area of applied computational mechanics, modeling of multi-physics problems, manufacturing and surface modification processes. The current focus is on multi-physics modeling of photovoltaic solar panel with auxiliary concentrator; non-dimensional finite element modeling of thermal problems; and micro-mechanical modeling of thermal barrier coating. Past activities have included fundamental understanding of the relation between deformation and process parameters during materials processing, and to apply this understanding to product design, tooling design with enhanced life and optimum process control. Processes studied include metal extrusion, metal rolling, laser heating, laser cutting, laser welding, laser shock processing, submerged arc-welding and spin casting.

Funded Research Projects

- [1] Title: Analytical Evaluation Technique for Storage Tanks (ME2205); Team: M. Sunar, M., A.F.M. Arif, B. Al-Bedoor, N. Hamadan, and Y. Al-Nassar.
 Funded by: Saudi Aramco Role: Co-Investigator
 Duration: 9/2000-12/2001 Status: Completed
- [2] Title: Prediction Of Required Force For Hot Aluminum Extrusion (FT/2000-11); Team: A.F.M. Arif, A.K. Sheikh.
 Funded by: KFUPM Role: Principal Investigator
 Duration: 12/2000-1/2002 Status: Completed
- [3] Title: Finite Element Analysis of Failure in Heat Transfer Line (PN CER2274); Team: K. Rehman, A.F.M. Arif, M.H. Baluch.
 Funded by: SABIC Role: Co-Investigator
 Duration: 6/2003-1/2004 Status: Completed
- [4] Title: Development Of Die Life Enhancement Strategy For Hot Extrusion Of Aluminum Alloys (FT/2001-20); Team: A.K. Sheikh, A.F.M. Arif.

- Funded by: KFUPM Role: Co-Investigator
Duration: 2/2002-5/2005 Status: Completed
- [5] Title: Development of a Computational Procedure for the Simulation of Laser Shock Processing (FT/2002-06); Team: A.F.M. Arif and B.S.Yilbas
Funded by: KFUPM Role: Principal Investigator
Duration: 1/2003-6/2005 Status: Completed
- [6] Title: Strategies To Produce Quality Products In Aluminum Extrusion (ARI-012); Team: A.F.M. Arif, A.K. Sheikh, K. Raza, M. Inam
Funded by: KFUPM Role: Principal Investigator
Duration: 12/2003-5/2005 Status: Completed
- [7] Title: Die Life Improvement For Hot Extrusion Of Aluminum Alloys (KACST ARP-23-19); Team: A.F.M. Arif, A.K. Sheikh, Z. Gasem, M. Younas
Funded by: KACST Role: Principal Investigator
Duration: 11/2004-5/2007 Status: Completed
- [8] Title: Die Assessing needs and developing an implementation strategy for introducing rapid prototyping, rapid tooling and virtual manufacturing technologies in KSA (FT/2004-06); Team: A.K. Sheikh, A.F.M. Arif, M. Faisal, F. Sulaiman, M. Ahmed
Funded by: KFUPM Role: Co- Investigator
Duration: 9/2004-10/2005 Status: Completed
- [9] Title: Effects of high vane passing frequency of the turbine boiler feed pump on damaging other related components. (CERN 2289); Team: F. Al-Sulaiman, Y. Khulief, A. Al-Qutub, A.F.M. Arif, R. Ben Mansoor
Funded by: Saudi Electric Co. Role: Co- Investigator
Duration: 1/2005-6/2008 Status: Completed
- [10] Title: Optimization of Repair Sleeve Design (ME 2272); Team: A.F.M. Arif, A.S. Eleiche, Y. Al-Nassar, S. Khan., H. Al-Gahtani
Funded by: Saudi Aramco Role: Principal Investigator
Duration: 10/2006-6/2009 Status: Completed
- [11] Title: Effect of Billet Quality on the Hot Extrusion Die Life (SB070023); Team: A.F.M. Arif and A.K.Sheikh
Funded by: KFUPM/SABIC Role: Principal Investigator
Duration: 5/2007-5/2008 Status: Completed
- [12] Title: Numerical & Experimental Investigation of Thermal Stress Development during Laser Cutting of Sheet Metal (SB070014); Team: A.F.M. Arif, and B.S.Yilbas
Funded by: KFUPM/SABIC Role: Principal Investigator
Duration: 5/2007-5/2008 Status: Completed

- [13] Title: Effect of Surface Preparation and profile Geometry on the Case-Hardening of H13 Tool Steel (SB080002); Team: A.F.M. Arif, and A.K. Sheikh
 Funded by: KFUPM/SABIC Role: Principal Investigator
 Duration: 5/2008-5/2009 Status: Completed
- [14] Title: Numerical Modeling of Laser Welding Process using Volumetric Moving Heat Source (SB080003); Team: A.F.M. Arif, and B.S. Yilbas
 Funded by: KFUPM/SABIC Role: Principal Investigator
 Duration: 5/2008-5/2009 Status: Completed
- [15] Title: Thermal-Structural Performance of Advanced Composite Materials for Pin Fin Applications (SB090009); Team: A.F.M. Arif, S.M. Zubair and M. Inam
 Funded by: KFUPM/SABIC Role: Principal Investigator
 Duration: 3/2009-3/2010 Status: Completed
- [16] Title: Rapid casting's of non ferrous and ferrous parts by deploying innovative pattern and mold making technologies using green sand, plaster/ceramics and polymers(AM-08-2008); Team: A.K. Sheikh, A.F.M. Arif, Y. Al-Nassar, H. Bahaiderah, H. Iqbal
 Funded by: KACST (NSTIP 1st cycle) Role: Co Investigator
 Duration: 3/2009-12/2011 Status: In-progress
- [17] Title: Laser Bending of Sheet Metals: Metallurgical Changes and Stress Analysis (SB090003); Team: A.F.M. Arif, B.S. Yilbas, B. Aleem
 Funded by: KFUPM/SABIC Role: Principal Investigator
 Duration: 3/2009-3/2010 Status: Completed
- [18] Title: Characterization of Thermal and Structural Performance of Thermal Interface Materials (SB100004); Team: A.F.M. Arif, S.M. Zubair, M. Inam
 Funded by: KFUPM/SABIC Role: Principal Investigator
 Duration: 3/2010-6/2011 Status: Completed
- [19] Title: Performance Enhancement of fins (FT100016); Team: S.M. Zubair, A.F.M. Arif, M.T.Mustafa, M. Inam
 Funded by: KFUPM Role: Co- Investigator
 Duration: 3/2010-6/2011 Status: Completed
- [20] Title: Effect of Composite Fin Profile on Thermal-Structural Performance of Heat Sinks (FT101007); Team: A.F.M. Arif, S.M. Zubair, S. Pashah, M. Inam
 Funded by: KFUPM/SABIC Role: Principal Investigator
 Duration: 3/2011-3/2012 Status: In-progress
- [21] Title: Residual Stress Prediction for Spiral Welded Pipes (SB101009); Team: Y. Al-Nassar, A.F.M. Arif, M. Anis, A. Al-Omari
 Funded by: KFUPM/SABIC Role: Co-Investigator
 Duration: 3/2011-9/2012 Status: In-progress

- [22] Title: Design and Manufacturing of Solar Power Systems and Devices for Challenging Environments (R6-DMN-08); Team: (From KFUPM) A.K.Sheikh (PI), A.F.M.Arif, P. Gandhidasan, El-Shafai, H. Bahaidrah; (From MIT) S. Dubowsky,
 Funded by: KFUPM/MIT Role: Co-Investigator
 Duration: 9/2008-8/2013 Status: In-progress
- [23] Title: Performance Evaluation and Life Prediction Modeling For Thermal Barrier Coatings Used In Industrial Gas Turbines (R9-CE-09); Team: (From KFUPM) A.F.M.Arif (PI), Z. Gasem, K. Alathel, S. Akhtar; (From MIT) L. Anand
 Funded by: KFUPM/MIT Role: Principal Investigator
 Duration: 9/2009-8/2013 Status: In-progress
- [24] Title: Development of optimization guidelines for extrusion die profiles with improved service life (SB111002); Team: S.S. Akhtar and A.F.M. Arif
 Funded by: KFUPM/SABIC Role: Co-Investigator
 Duration: 3/2012-3/2013 Status: In-progress
- [25] Title: Study of combined heat and mass transfer from composite annular and pin fins (SB111004); Team: S. Pashah, A.F.M. Arif, S.M. Zubair and M. Anis
 Funded by: KFUPM/SABIC Role: Co-Investigator
 Duration: 3/2012-3/2013 Status: In-progress
- [26] Title: Fitness for service analysis for pipe with metal loss defect using non-dimensional FEM (IN111043); Team: S. Pashah, A.F.M. Arif, and Y. Al-Nassar
 Funded by: KFUPM Role: Co-Investigator
 Duration: 6/2012-6/2013 Status: In-progress
- [27] Title: Modeling anisotropic cycle behavior using FEM (JF111007); Team: Jafar Bin Mousa and A.F.M. Arif
 Funded by: KFUPM Role: Consultant
 Duration: 6/2012-6/2013 Status: In-progress

Post-Doc, Doctoral and Master Research Work

Doctoral Dissertation

[Abul Fazal M. Arif](#), "Computational aspects of an implicit finite element procedure for elasto- viscoplastic large deformation problems", Ph.D. Dissertation, Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, 1991.

Doctoral & M.S. Dissertations Supervised

- [1] [Ovaisullah Khan](#), "Thermo-mechanical modeling of tool and work-piece interface in metal forming process.", M.S. thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2000 (currently: Post-doc Fellow, Department Mechanical Engineering, University of Kentucky, USA).
- [2] [Sayyad Zahid Qamar](#), "Modeling and analysis of extrusion pressure and die life for complex aluminum profiles", Ph.D. Dissertation, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2004. Co-supervised with [Prof. Anwar K. Sheikh](#). (currently: Associate Professor, Department of Mechanical Engineering, Sultan Qaboos University, Muscat, Oman).
- [3] [Hasan Khurshid](#), "Effect of bolt layout on the mechanical behavior of bolted joint", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2004. Co-supervised with [Dr. Yagoub Al-Nassar](#).
- [4] [Syed Sohail Akhtar](#), "Analysis and modeling of hot extrusion die for its service life enhancement", Ph.D. Dissertation, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2008. (currently: Assistant Professor, Department of Mechanical Engineering, KFUPM, Saudi Arabia).
- [5] [Hussain Muhammad Al-Muslim](#), "Impact of combined mechanical damage on the integrity of pipelines", Ph.D. Dissertation, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2010. (currently: Mechanical Engineering Div/Piping Unit, Consulting Services Department, Saudi Aramco, Saudi Arabia).
- [6] [Ahmed Saleh Al-Omari](#), "Finite element modeling of ring splitting test to predict residual stresses in spiral welded pipe", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals,

- Dhahran, Saudi Arabia, 2010. (currently: working with Saudi Aramco, Saudi Arabia).
- [7] [Muhammad Usama Siddiqui](#), "Multi-physics modeling of photovoltaic modules and arrays with auxiliary thermal collectors", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2011. (currently: pursuing Ph.D. in Mechanical Engineering at KFUPM).
- [8] [Muhammad Haris Malik](#), "Optimization of Impact resistance of composite plates and pipes", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, December 2012.
- [9] [Osama Hasan](#), "Performance and life prediction model for photovoltaic modules: Effect of encapsulant constitutive behavior", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2012 (In-progress).

Doctoral & M.S. Dissertations Committee Member

- [1] Arshad Raza, "Visualization with spline using a genetic algorithm", M.S. Thesis, Department of Computer Science, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2001.
- [2] Ali Dhaif Al-Zayer, "Analytical and fe investigation of initial clearance effect on tube-to-tubesheet joint strength", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2001.
- [3] Syed Iftikhar Mahmood, "Impact testing of brittle materials using split Hopkinson pressure bar technique", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2004.
- [4] Mujahid Ahmed, "Cryogenic drilling of Kevlar composite laminates", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2004.
- [5] Jaafer Bin Musa, "Experimental and numerical analyses of mixed mode crack initiation angle", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2006.
- [6] Abdulaziz Al-Aboodi, "Finite element analysis of roller expanded tube-tubesheet joints with over enlarged tube sheet holes", Ph.D. Dissertation,

Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2006.

- [7] Abdel-Hadi Al-Yousef, "Improving quality and productivity of casting process by using advanced simulation and rapid prototyping technology", M.S. Thesis, Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2012.

Post-Doc Research Supervision

- [1] Sulaman Pashah, Ph.d , Université Claude Bernard Lyon-I France, Post-doc research topic: Development of non-dimensional finite for thermal problems, "Visualization with spline using a genetic algorithm", Department of Mechanical Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, 2009-2011 (currently: Assistant Professor, Department of Mechanical Engineering, KFUPM, Saudi Arabia).

PUBLICATIONS

ARCHIVAL JOURNAL PUBLICATIONS

Accepted for publication

- [1] Akhtar, S.S., **Arif, A.F.M.**, Yilbas, B.S., Finite Element Simulation of the Effect of Al-6063 Billet Quality on the Extrusion Die Performance (ilt-09-2010-0072), Industrial Lubrication and Tribology, 2011, (Accepted).
- [2] Al-Muslim, H.M. and **Arif, A.F.M.**, Investigation and Validation of FEA Material Modeling for Integrity Assessment of Indented Pipe Under Static and Cyclic Loading, Journal of Pressure Vessel Technology, Transactions of the ASME, 2012, (Accepted).

2013

- [3] Siddiqui, M. Usama, **Arif, A.F.M.**, Bilton, A., Dubowsky, S., and El-Shafei, M., An Improved Electric Circuit Model for Photovoltaic modules based on Sensitivity Analysis, Solar Energy, 90 , pp. 29-42, 2013.
- [4] Pashah, S., **Arif, A.F.M.**, Zubair, S.M., Efficiency of longitudinal composite fins with thermal interface studied through plane thermal nondimensional finite element, Heat Transfer Engineering. 34(7), pp. 629-641, 2013.

- [5] Zubair, Syed M., Mustafa, M.T., **Arif, A.F.M.**, Thermal Analysis of Orthotropic Pin Fins with Contact Resistance: A Closed-Form Analytical Solution, *Heat Transfer Engineering*, 34(4), pp. 349-360, 2013.

2012

- [6] **Arif, A.F.M.**, Zubair, S.M., Pashah, S., Thermal-Structural Performance of Orthotropic Pin Fin in Electronics Cooling Applications, *Journal of Electronic Packaging*, Transactions of the ASME, 134(4), art. no. 041005, 2012.
- [7] **Arif, A.F.M.**, Al-Nassar, Y.N., Al-Qahtani, H., Khan, S.M.A., Anis, M., Eleiche, A.M., Inam, M., Al-Nasri, N.I. and Al-Muslim, H.M. Optimization of Pipe Repair Sleeve Design, *Journal of Pressure Vessel Technology*, Transactions of the ASME 134 (5) , art. no. 51702, 2012.
- [8] Siddiqui, M. Usama, **Arif, A.F.M.**, Kelley, Leah, Dubowsky, Steven, Three-dimensional thermal modeling of a photovoltaic module under varying conditions, *Solar Energy*, 86 (9), pp. 2620-2631, 2012.
- [9] **Arif , A.F.M.**, Al-Omari , A. S., and Al-Nassar ,Y. N., Development of residual stress during manufacturing of spiral welded pipes, *Materials and Manufacturing Processes*, 27 (7) , pp. 738-745, 2012.
- [10] Khulief, Y.A., Al-Sulaiman, F.A., **Arif, A.**, Ben-Mansour, R., Al-Qutub, A., Anis, M., Computational Tradeoff in Modal Characteristics of Complex Rotor Systems using FEM, *Arabian Journal for Science and Engineering*, 37 (6) , pp. 1653-1664, 2012.
- [11] Yilbas, B.S., **Arif, A.F.M.**, Abdul Aleem, B.J., Laser bending of AISI 304 steel sheets: Thermal stress analysis, *Optics and Laser Technology*, 44 (2) , pp. 303-309, 2012
- [12] Mustafa, M.T., Zubair, S.M., **Arif, A.F.M.**, Letter to the editor, *Applied Thermal Engineering* 37 , pp. 438-439, 2012.
- [13] Al-Nassar , Y. N., Khurshid, H., **Arif, A.F.M.**, The Effect of Clearance and Pre-Tension on the Performance of a Bolted-Joint Using 3D FEA, *Arabian Journal for Science and Engineering* 37 (3) , pp. 749-763, 2012.
- [14] Pashah, S., **Arif, A.F.M.**, Zubair, S.M., Mustafa, M.T., The effect of coating and interface resistance on thermal performance of variable thickness annular composite fins. *Energy Conversion and Management*, 54(1), pp. 152-161, 2012.
- [15] Akhtar, S.S., **Arif, A.F.M.**, Yilbas, B.S., Influence of multiple nitriding on the case hardening of H13 tool steel: experimental and numerical investigation, *Int. Journal of Advanced Manufacturing Technology* 58 (1-4) , pp. 57-70, 2012.

2011

- [16] Li, L., Kecskemethy, A., **Arif, A.F.M.**, Dubowsky, S., Optimized bands: A new design concept for concentrating solar parabolic mirrors, *Journal of Solar Energy Engineering, Transactions of the ASME* 133 (3), art. no. 031003, 2011.
- [17] Yilbas, B.S., **Arif, A.F.M.**, Karatas, C., Laser treatment of silicon at nitrogen ambient: Thermal stress analysis, *Surface Engineering* 27 (6), pp. 436-444, 2011.
- [18] Bilton, A.M., Wiesman, R., **Arif, A.F.M.**, Zubair, S.M., Dubowsky, S., On the feasibility of community-scale photovoltaic-powered reverse osmosis desalination systems for remote locations, *Renewable Energy* 36 (12), pp. 3246-3256, 2011.
- [19] Al-Muslim, Husain M. and **Arif, Abul Fazal M.**, Effect of Geometry, Material, and Pressure Variability on Strain and Stress Fields in Dented Pipelines Under Static and Cyclic Pressure Loading Using Probabilistic Analysis, *J. Pressure Vessel Technol.* 133 (4), 041402 (13 pages), August 2011. doi:10.1115/1.4002860
- [20] Mustafa, M.T., Zubair, S.M., **Arif, A.F.M.**, Thermal analysis of orthotropic annular fins with contact resistance: A closed-form analytical solution, *Applied Thermal Engineering* 31 (5), pp. 937-945, 2011.
- [21] **Arif, A.F.M.**, Al-Omari, A.S., Yilbas, B.S., Al-Nassar, Y.N., Thermal Stress Analysis of Spiral Laser-Welded Tube, *Journal of Materials Processing Technology*, 211 (4), pp. 675–687, 2011.
- [22] Yilbas, B.S., **Arif, A.F.M.**, Laser Cutting of Steel and Thermal Stress Development, *Optics and Laser Technology* 43 (4), pp. 830-837, 2011
- [23] Yilbas, B.S., Karatas, C., **Arif, A.F.M.**, Abdul Aleem, B.J., Laser control melting of alumina surfaces and thermal stress analysis, *Optics and Laser Technology* 43 (4), pp. 858-865, 2011.
- [24] Pashah, S., **Arif, A.F.M.**, Zubair, S.M., Study of orthotropic pin fin performance through axisymmetric thermal non-dimensional finite element, *Applied Thermal Engineering*, 31 (2-3), pp. 376-384, 2011.
- [25] Sheikh, A.K., Younas, M., **Arif, A.F.M.**, Gasem, Z., Reliability and Performance Evaluation of Extrusion Dies, *Int. J. Reliability and Safety*, 5 (1), pp. 21-43, 2011

2010

- [26] **Arif, A.F.M.**, Akhtar, S.S., Yilbas, B.S., Effect of process variables on gas nitriding of H13 tool steel with controlled nitriding potential, *International Journal of Surface Science and Engineering*, 4 (4/5/6), pp. 396 – 415, 2010

- [27] Yilbas, B., **Arif, A.F.M.**, Karatas, C., Aleem, B.J.A., Tabet, N., Laser gas-assisted nitriding of steel: Residual stress analysis , *Industrial Lubrication and Tribology*, 62 (4), pp. 214-223, 2010.
- [28] Yilbas, B.S., **Arif, A.F.M.**, Karatas, C., Akhtar, S., Aleem, B.J.A., Laser nitriding of tool steel: Thermal stress analysis, *International Journal of Advanced Manufacturing Technology*, 49 (9-12), pp. 1009-1018, 2010.
- [29] Akhtar, S.S., **Arif, A.F.M.**, Yilbas, B.S. , Evaluation of gas nitriding process with in-process variation of nitriding potential for AISI H13 tool steel , *International Journal of Advanced Manufacturing Technology*, 47 (5-8), pp. 687-698, 2010.
- [30] Akhtar, S.S., **Arif, A.F.M.**, Yilbas, B.S., Sheikh, A.K., Influence of surface preparation on the kinetics of controlled gas-nitrided AISI H13 steels used in extrusion dies , *Journal of Materials Engineering and Performance*, 19 (3), pp. 347-355, 2010.
- [31] Akhtar, S.S., **Arif, A.F.M.**, Yilbas, B.S. , Nitriding of aluminum extrusion die: Effect of die geometry , *Journal of Materials Engineering and Performance*, 19 (3), pp. 401-412, 2010.
- [32] Azad, H., Mustafa, M.T., **Arif, A.F.M.**, Analytic solutions of initial-boundary-value problems of transient conduction using symmetries , *Applied Mathematics and Computation*, 215 (12), pp. 4132-4140, 2010.
- [33] Zubair, S.M., **Arif, A.F.M.**, Sharqawy, M.H., Thermal analysis and optimization of orthotropic pin fins: A closed-form analytical solution , *Journal of Heat Transfer*, 132 (3), pp. 1-8, 2010.
- [34] Yilbas, B.S., **Arif, A.F.M.**, Abdul Aleem, B.J. , Laser welding of low carbon steel and thermal stress analysis , *Optics and Laser Technology*, 42 (5), pp. 760-768, 2010.
- [35] Akhtar, S.S., **Arif, A.F.M.** , Fatigue failure of extrusion dies: Effect of process parameters and design features on die life , *Journal of Failure Analysis and Prevention*, 10 (1), pp. 38-49, 2010.
- [36] Yilbas, B.S., **Arif, A.F.M.**, Abdul Aleem, B.J. , Laser cutting of rectangular blanks in thick sheet steel: Effect of cutting speed on thermal stresses , *Journal of Materials Engineering and Performance*, 19 (2), pp. 177-184, 2010.
- [37] Yilbas, B.S., **Arif, A.F.M.**, Abdul Aleem, B.J. , Laser cutting of sharp edge: Thermal stress analysis , *Optics and Lasers in Engineering*, 48 (1), pp. 10-19, 2010.

- [38] Akhtar, S.S., **Arif, A.F.M.**, Sheikh, A.K. , Influence of billet quality on hot extrusion die life and its relationship with process parameters , *Advanced Materials Research*, 83-86, pp. 866-873, 2010.
- [39] **Arif, A.F.M.**, On the modeling of laser as a moving distributed volumetric heat source for laser cutting simulation, *Advanced Materials Research*, 83-86, pp. 858-865, 2010.

2009

- [40] Akhtar, S.S., **Arif, A.F.M.**, Yilbas, B.S. , Performance of Al-6063 primary and secondary billets used in hot aluminum extrusion , *Journal of Manufacturing Science and Engineering, Transactions of the ASME*, 131 (5), pp. 0545021-0545027, 2009.
- [41] **Arif, A.F.M.**, Effect of input variability on the quality of laser shock processing , *Journal of Mechanical Science and Technology*, 23 (10), pp. 2603-2611, 2009.
- [42] Yilbas, B.S., **Arif, A.F.M.** , Improved formulation of electron kinetic theory approach for laser shortpulse heating: Thermal stress consideration , *Current Applied Physics*, 9 (6), pp. 1423-1433, 2009.
- [43] **Arif, A.F.M.**, Akhtar, S.S., Sheikh, A.K. , Effect of Al-6063 billet quality on the service life of hot extrusion die: Metallurgical and statistical investigation , *Journal of Failure Analysis and Prevention*, 9 (3), pp. 253-261, 2009.
- [44] **Arif, A.F.M.**, Modelling of Laser Hole Cutting: Effect of Hole Diameter on Thermal Stresses , *Lasers in Engineering*, 19 (1-2), pp. 121-137, 2009.
- [45] Yilbas, B.S., Karatas, C., **Arif, A.F.M.**, Abdul Aleem, B.J. , Laser gas assisted nitriding of alumina surfaces , *Surface Engineering*, 25 (3), pp. 235-240, 2009.
- [46] Yilbas, B.S., **Arif, A.F.M.**, Aleem, B.J.A. , Laser cutting of holes in thick sheet metals: Development of stress field , *Optics and Lasers in Engineering*, 47 (9), pp. 909-916, 2009.
- [47] Yilbas, B.S., **Arif, A.F.M.**, Abdul Aleen, B.J., Laser cutting of large-aspect-ratio rectangular blanks in thick sheet metal: Thermal stress analysis, *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 223 (1), pp. 63-71, 2009.
- [48] **Arif, A.F.M.**, Yilbas, B.S., Aleem, B.J.A. , Laser cutting of thick sheet metals: Residual stress analysis , *Optics and Laser Technology*, 41 (3), pp. 224-232, 2009.
- [49] **Arif, A.F.M.**, Effect of extrusion die profile on the uniformity of Nitrided layers , *Materials and Manufacturing Processes*, 24 (6), pp. 619-625, 2009.

- [50] Yilbas, B.S., **Arif, A.F.M.**, Karatas, C., Laser gas assisted nitriding of Ti-6Al-4v alloy and residual stress analysis, *Surface Engineering*, 25 (3), pp. 228-234, 2009.
- [51] **Arif, A.F.M.**, Yilbas, B.S. , Laser melting of HVOF coating: Effect of base material on residual stress formation , *Surface Engineering*, 25 (3), pp. 249-256, 2009.
- [52] Yilbas, B.S., Mansoor, S.B., **Arif, A.F.M.**, Laser shock processing: Modeling of evaporation and pressure field developed in the laser-produced cavity , *International Journal of Advanced Manufacturing Technology*, 42 (3-4), pp. 250-262, 2009.
- [53] Yilbas, B.S., **Arif, A.F.M.**, Karatas, C., Raza, K., Laser treatment of aluminum surface: Analysis of thermal stress field in the irradiated region , *Journal of Materials Processing Technology*, 209 (1), pp. 77-88, 2009.

2008

- [54] Younas, M., Sheikh, A.K., **Arif, A.F.M.**, Impact of repeated nitriding cycles on extrusion die life - Some statistical and metallurgical observations , *Journal of Failure Analysis and Prevention*, 8 (5), pp. 461-468, 2008.
- [55] Yilbas, B.S., **Arif, A.F.M.**, Modelling of residual stresses during laser cutting of small-diameter holes , *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 222 (12), pp. 1577-1587, 2008.
- [56] Qamar, S.Z., Sheikh, A.K., **Arif, A.F.M.**, A CVN-KIC correlation for H13 tool steels , *International Journal of Materials and Product Technology*, 33 (4), pp. 421-432, 2008.
- [57] **Arif, A.F.M.**, Yilbas, B.S., Laser treatment of HVOF coating: Modeling and measurement of residual stress in coating , *Journal of Materials Engineering and Performance*, 17 (5), pp. 644-650, 2008.
- [58] Qamar, S.Z., Sheikh, A.K., **Arif, A.F.M.**, Younas, M., Pervez, T., Monte Carlo simulation of extrusion die life , *Journal of Materials Processing Technology*, 202 (1-3), pp. 96-106, 2008.
- [59] **Arif, A.F.M.**, Yilbas, B.S. , Thermal stress developed during the laser cutting process: Consideration of different materials , *International Journal of Advanced Manufacturing Technology*, 37 (7-8), pp. 698-704, 2008.

2007

- [60] Yilbas, B.S., **Arif, A.F.M.**, Residual stress analysis for HVOF diamalloy 1005 coating on Ti-6Al-4V alloy , *Surface and Coatings Technology*, 202 (3), pp. 559-568, 2007.
- [61] Qamar, S.Z., Pervez, T., Siddiqui, R.A., Sheikh, A.K., **Arif, A.F.M.**, Sensitivity Analysis in Life Prediction of Extrusion Dies, *Journal of Achievements in Materials and Manufacturing Engineering*, 25 (1), pp. 49-54, November 2007.
- [62] Yilbas, B.S., **Arif, A.F.M.**, Laser shock processing of aluminium: Model and experimental study , *Journal of Physics D: Applied Physics*, 40 (21), pp. 6740-6747, 2007.
- [63] Qamar, Z., Sheikh, A.K., **Arif, A.F.M.**, Pervez, T. , Defining shape complexity of extrusion dies - A reliabilistic view , *Materials and Manufacturing Processes*, 22 (7), pp. 804-810, 2007.
- [64] Qamar, S.Z., Pervez, T., **Arif, A.F.M.**, Sheikh, A.K., Effect of process parameters on metal flow and dead metal zone in extrusion, *Archives of Materials Science*, 28 (1-4), pp. 118-123, 2007.
- [65] Qamar, S.Z., Sheikh, A.K., **Arif, A.F.M.**, Pervez, T., Siddiqui, R.A., Heat Treatment of a Hot-work Die Steel, *Archives of Materials Science and Engineering*, 28 (8), pp. 503-508, August 2007.
- [66] Yilbas, B.S., **Arif, A.F.M.**, Karatas, C., Ahsan, M. , Cemented carbide cutting tool: Laser processing and thermal stress analysis , *Applied Surface Science*, 253 (12), pp. 5544-5552, 2007.

2006

- [67] **Arif, A.F.M.**, Yilbas, B.S. , Three-point bend testing of HVOF Inconel 625 coating: FEM simulation and experimental investigation , *Surface and Coatings Technology*, 201 (3-4), pp. 1873-1879, 2006.
- [68] Yilbas, B.S., **Arif, A.F.M.**, Laser short pulse heating: Influence of pulse intensity on temperature and stress fields , *Applied Surface Science*, 252 (24), pp. 8428-8437, 2006.
- [69] Qamar, S.Z., Sheikh, A.K., **Arif, A.F.M.**, Pervez, T. , Regression-based CVN-KIC Models for hot work tool steels , *Materials Science and Engineering A*, 430 (1-2), pp. 208-215, 2006.
- [70] Yilbas, B.S., **Arif, A.F.M.**, Gondal, M.A. , Plastic deformation of steel surface due to laser shock processing , *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 220 (6), pp. 857-867, 2006.

2005

- [71] Yilbas, B.S., **Arif, A.F.M.**, Gondal, M.A. , HVOF coating and laser treatment: Three-point bending tests , *Journal of Materials Processing Technology*, 164-165, pp. 954-957, 2005.
- [72] Yilbas, B.S., **Arif, A.F.M.**, Laser short-pulse heating with time-varying intensity and thermal stress development in the lattice subsystem , *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 219 (1), pp. 73-82, 2005.

2004

- [73] Qamar, S.Z., **Arif, A.F.M.**, Sheikh, A.K., Analysis of product defects in a typical aluminum extrusion facility , *Materials and Manufacturing Processes*, 19 (3), pp. 391-405, 2004.
- [74] Sheikh, A.K., **Arif, A.F.M.**, Qamar, S.Z., A probabilistic study of failures of solid and hollow dies in hot aluminum extrusion , *Journal of Materials Processing Technology*, 155-156 (1-3), pp. 1740-1748, 2004.
- [75] Qamar, S.Z., **Arif, A.F.M.**, Sheikh, A.K., A new definition of shape complexity for metal extrusion , *Journal of Materials Processing Technology*, 155-156 (1-3), pp. 1734-1739, 2004.
- [76] Khan, O.U., Jamal, A., Arshed, G.M., **Arif, A.F.M.**, Zubair, S.M., Thermal analysis of a cold rolling process - A numerical approach , *Numerical Heat Transfer; Part A: Applications*, 46 (6), pp. 613-632, 2004.
- [77] **Arif, A.F.M.**, Yilbas, B.S., Laser short pulse heating of copper: Thermo-elasto-plastic analysis , *Journal of Laser Applications*, 16 (2), pp. 111-120, 2004.
- [78] Yilbas, B.S., Gondal, M.A., **Arif, A.M.F.**, Shuja, S.Z., Laser shock processing of Ti-6Al-4V alloy , *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 218 (5), pp. 473-482, 2004.
- [79] **Arif, A.F.M.**, Khan, O., Zubair, S.M., Prediction of roll temperature with a non-uniform heat flux at tool and workplace interface , *Heat and Mass Transfer/Waerme- und Stoffuebertragung*, 41 (1), pp. 75-94, 2004.
- [80] **Arif, A.F.M.**, Khan, O., Sheikh, A.K., Roll deformation and stress distribution under thermo-mechanical loading in cold rolling , *Journal of Materials Processing Technology*, 147 (2), pp. 255-267, 2004.
- [81] Yilbas, B.S., **Arif, A.F.M.**, Shuja, S.Z., Gondal, M.A., Shirokof, J. , Investigation Into Laser Shock Processing , *Journal of Materials Engineering and Performance*, 13 (1), pp. 47-54, 2004.

2003

- [82] Merah, N., Al-Zayer, A., Shuaib, A., **Arif, A.**, Finite element evaluation of clearance effect on tube-to-tubesheet joint strength , *International Journal of Pressure Vessels and Piping*, 80 (12), pp. 879-885, 2003.
- [83] Yilbas, B.S., **Arif, A.F.M.**, Laser shortpulse heating of a gold-chromium-gold multilayer assembly , *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 217 (7), pp. 797-810, 2003.
- [84] Yilbas, B.S., Shuja, S.Z., **Arif, A.**, Gondal, M.A. , Laser-shock processing of steel , *Journal of Materials Processing Technology*, 135 (1), pp. 6-17, 2003.
- [85] **Arif, A.F.M.**, Sheikh, A.K., Qamar, S.Z. , A study of die failure mechanisms in aluminum extrusion , *Journal of Materials Processing Technology*, 134 (3), pp. 318-328, 2003.
- [86] **Arif, A.F.M.**, On the use of non-linear finite element analysis in deformation evaluation and development of design charts for extrusion processes , *Finite Elements in Analysis and Design*, 39 (10), pp. 1007-1020, 2003.
- [87] **Arif, A.F.M.**, Numerical prediction of plastic deformation and residual stresses induced by laser shock processing , *Journal of Materials Processing Technology*, 136 (1-3), pp. 120-138, 2003.

2002

- [88] Yilbas, B.S., **Arif, A.F.M.**, Temperature and stress fields in silver due to laser picosecond heating pulse , *Numerical Heat Transfer; Part A: Applications*, 42 (6), pp. 623-646, 2002.
- [89] Yilbas, B.S., Faisal, M., Shuja, S.Z., **Arif, A.F.M.**, Laser pulse heating of steel surface and flexural wave analysis , *Optics and Lasers in Engineering*, 37 (1), pp. 63-83, 2002.
- [90] Shuja, S.Z., Yilbas, B.S., **Arif, A.F.M.**, Investigation into thermoelastic displacement of surfaces subjected to gas assisted laser repetitive pulse heating , *Surface Engineering*, 18 (1), pp. 37-45, 2002.
- [91] Shuja, S.Z., **Arif, A.F.M.**, Yilbas, B.S. , Laser repetitive pulse heating of steel surface: A material response to thermal loading , *Journal of Manufacturing Science and Engineering, Transactions of the ASME*, 124 (3), pp. 595-604, 2002.
- [92] Yilbas, B.S., **Arif, A.F.M.**, Elastic displacement of surface due to laser picosecond pulse heating of gold , *Optics and Lasers in Engineering*, 37 (6), pp. 651-672, 2002.

2001

- [93] Yilbas, B.S., **Arif, A.F.M.**, Shuja, S.Z. , Simulation of elastic displacement of surface during laser short pulse heating of gold , *Optical and Quantum Electronics*, 33 (12), pp. 1241-1258, 2001.
- [94] Yilbas, B.S., **Arif, A.F.M.**, Material response to thermal loading due to short pulse laser heating , *International Journal of Heat and Mass Transfer*, 44 (20), pp. 3787-3798, 2001.
- [95] Yilbas, B.S., Shuja, S.Z., **Arif, A.F.M.**, Elastic displacement of the surface due to a laser heating pulse , *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 215 (10), pp. 1271-1282, 2001.
- [96] **Arif, A.F.M.**, Sheikh, A.K., Qamar, S.Z., Al-Fuhaid, K.M. , Variation of pressure with ram speed and die profile in hot extrusion of aluminum-6063 , *Materials and Manufacturing Processes*, 16 (5), pp. 701-716, 2001.
- [97] **Arif, A.F.M.**, Shuja, S.Z., Yilbas, B.S. , Gas-assisted laser single-pulse heating: Study of thermal stresses , *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 215 (3), pp. 291-306, 2001.

2000

- [98] Yilbas, B.S., **Arif, A.F.M.**, Laser short pulse heating and elastic-plastic wave generation , *Japanese Journal of Applied Physics, Part 1*, 39 (10), pp. 5879-5888, 2000.
- [99] **Arif, A.F.M.**, Pervez, T., Pervez Mughal, M. , Performance of a finite element procedure for hyperelastic-viscoplastic large deformation problems , *Finite elements in analysis and design*, 34 (1), pp. 89-112, 2000.

1992

- [100] **Arif, Abul Fazal M.**, Zabaras, Nicholas, On the performance of two tangent operators for finite element analysis of large deformation inelastic problems, *International Journal for Numerical Methods in Engineering*, 35, pp. 369-389, 1992.
- [101] Zabaras, Nicholas, **Arif, Abul Fazal Muhammad**, A family of integration algorithms for constitutive equations in finite deformation elasto-

viscoplasticity , International Journal for Numerical Methods in Engineering, 33 (1), pp. 59-84, 1992.

CONFERENCE PAPERS

2012

- [1] Osama Hasan, M.U. Siddiqui and **A.F.M. Arif**: “Finite Element Modeling and Analysis of Photovoltaic Modules (IMECE2012-89429)”, Proceedings of the ASME 2012 International Mechanical Engineering Congress & Exposition IMECE2012, November 9-15, 2012, Houston, Texas, USA.
- [2] Syed Sohail Akhtar and **Abul Fazal M. Arif**: “Experimental and Numerical Investigation of Extrusion Die Profiles for Uniform and Effective Case-Hardening Treatment (IMECE2012-87401)”, Proceedings of the ASME 2012 International Mechanical Engineering Congress & Exposition IMECE2012, November 9-15, 2012, Houston, Texas, USA.
- [3] **A.F.M. Arif**, A. Al-Omari, A.K. Sheikh, Y. Al-Nassar and M. Anis: “Estimation of Residual Stress in Spiral Welded Pipe - Regression And Numerical Model (IMECE2012-87703)”, Proceedings of the ASME 2012 International Mechanical Engineering Congress & Exposition IMECE2012, November 9-15, 2012, Houston, Texas, USA.
- [4] K.S. Al-Athel and **A.F.M. Arif**: “Effect of Carbon Nanotubes (CNT) on the Thermal Conductivity of Nanocomposites Using a New RVE Approach (Paper # 239)”, Proc. of 15th European Conference On Composite Materials ECCM15, June 24-28, 2012, Venice, Italy.
- [5] S.S.Akhtar, **A.F.M. Arif**, and Z. Gasem: “Stress Field in the Top Coat of Thermal Barrier Coatings due to the Formation Of YVO_4 – A Numerical Study (Paper # 209)”, Proc. of 26th International Conference on Surface Modification Technologies SMT26, , June 20-22, 2012, Ecole Centrale de Lyon, France.
- [6] Sulaman Pashah, **Abul Fazal M. Arif** and Syed M. Zubair: “Non-Dimensional Finite Element Formulation for Thermal Problems (ESDA2012-82421)”, Proceedings of the ASME 2012 11th Biennial Conference on Engineering Systems Design and Analysis ESDA2012, July 2-6, Nantes - France
- [7] M.U. Siddiqui and **A.F.M. Arif**: “Effect of Changing Atmospheric and Operating Conditions on The Thermal Stresses in PV Modules (ESDA2012-82740)”, Proceedings of the ASME 2012 11th Biennial Conference on Engineering Systems Design and Analysis ESDA2012, July 2-6, Nantes – France.

- [8] Husain Mohammed Al-Muslim and **A.F.M. Arif**: “Integrity Assessment of Interaction of Dents With Residual Stresses of Welds Using Probabilistic Design Analysis (IPC2012-90194)”, Proceedings of the 9th International Pipeline Conference (IPC2012), September 24-28, 2012, Calgary, Alberta, Canada.

2011

- [9] Li, L., Kecskemethy, A, **Arif, A. F. M.** and Dubowsky, S., A Novel Approach for Designing Parabolic Mirrors using Optimized Compliant Bands, Paper # DETC2011-47096, Proceedings of the ASME 2011 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2011 August 28-31, 2011, Washington, DC, USA.
- [10] **A.F.M. Arif**, Y.N. Al-Nassar, H. Al-Qahtani, S.M.A. Khan, M. Anis, A. Eleiche, M. Inam, N.I. Al-Nasri, H.M. Al-Muslim: “Optimization of pipe repair sleeve design” Paper # PVP2011-57123, Proceedings of ASME 2011 Pressure Vessels and Piping Conference, July 17-21, 2011, Baltimore, Maryland, USA.
- [11] Sulaman Pashah and **Abul Fazal M. Arif**: “Thermo-Mechanical Fatigue Life Prediction of Orthotropic Composite Pin Fin Heat Sinks for Electronic Packaging” Paper # InterPACK2011-52181, Proceedings of ASME IPACK2011, July 6-8, 2011, Portland, Oregon, USA.

2010

- [12] **A.F.M. Arif**, A.S. Al-Omari and Y. Al-Nassar: “Residual Stress Development during Submerged-Arc Welding of Spirally Welded Pipes: Experimental, Statistical and Numerical Study (MAN103)”, Proc. of International Conference on Applied Mechanics, Materials, and Manufacturing (ICAMMM-2010), December 13-15, 2010 at Sultan Qaboos University, Muscat, Oman.
- [13] **A.F.M. Arif**, S.S. Akhtar, B.S. Yilbas and A.K. Sheikh: “Effect of Billet Quality on Aluminum Extrusion Die life: Statistical, Microstructural and Numerical Investigation (MAN102)”, Proc. of International Conference on Applied Mechanics, Materials, and Manufacturing (ICAMMM-2010), December 13-15, 2010 at Sultan Qaboos University, Muscat, Oman.
- [14] Husain Mohammed Al-Muslim and **Abul Fazal M. Arif**: “Integrity Assessment of Multiple Dents in Oil and Gas Pipelines using Probabilistic

Design Analysis (IMECE2010-37803)", Proc. of 2010 ASME International Mechanical Engineering Congress & Exposition (IMECE), November 12-18, 2010, Vancouver, British Columbia, Canada.

- [15] **A.F.M. Arif**, S. Pashah, S.M. Zubair, M. Inam: "Thermal and Structural Response of Pin Fin for Different Interface Conditions (IMECE2010-39972)", Proc. of 2010 ASME International Mechanical Engineering Congress & Exposition (IMECE), November 12-18, 2010, Vancouver, British Columbia, Canada.
- [16] Husain Mohammed Al-Muslim and **Abul Fazal M. Arif**: "Effect of Geometry, Material And Pressure Variability on Strain And Stress Fields in Dented Pipelines Under Static and Cyclic Pressure Loading using Probability Design Analysis (IPC2010-31246)", Proceedings of the 8th International Pipeline Conference (IPC2010), September 27-October 1, 2010, Calgary, Alberta, Canada.
- [17] Nesar Merah, **Abul Fazal Arif**, Abdel-Salam Eleiche, Abdel-Rahman Shuaib, Numan Abu-Dheir, Haitham M. S.Bahaidarah, KFUPM, Dhahran, Saudi Arabia, Maria Yang, David Wallace, Warren Seering, Victor Tang, Massachusetts Institute of Technology, Cambridge, MA, United States: "A Global Collaborative Effort to Enhance Design in a Mechanical Engineering Curriculum in Saudi Arabia (DETC2010-28784)", Proc. of ASME 2010 International Design Engineering Technical Conferences (IDETC), August 15-18, 2010, Montréal, Canada.

2009

- [18] **Abul Fazal M. Arif** and Syed M. Zubair: "Thermal-Structural Performance of Orthotropic Pin Fin Applications" Paper # IPACK2009-89125, Proceedings of ASME IPACK2009, July 19-23, San Francisco, California, USA.

2008

- [19] B.S. Yilbas and **A.F.M. Arif**: "Laser Cutting of Sheet Metal and the Development of Thermal Stress", Proc. of the Int. Conf. on Advances in Materials and Processing Technology (AMPT-2008), (held in Bahrain, 2-5 November 2008).

2007

- [20] **A.F.M. Arif**, S. Akhtar, and A. K. Sheikh: "Critical Die Failure Types for Hot Aluminum Extrusion", Proc. of 4th International Conference and Exhibition

on Design and Production of Dies and Molds, Paper DM-62, pp. 73-76, 2007. (held at Cesme, Turkey, 21-23 June, 2007).

2006

- [21] A.K. Sheikh and **A.F.M. Arif**: "On the Heat Treatment of Hot Extrusion Dies", Proceedings of ICOMAST2006, Int. Conf. on Manufacturing Science & Technology, Paper 621, pp.427-430, held at Melaka, Malaysia, August 28-30, 2006.
- [22] J.B. Mousa, N. Merah, A. Eleiche, **A.F.M. Arif**: "Experimental & Numerical Analysis of Mixed Mode Crack Initiation Angle", Proceedings of ESDA2006, 8th Biennial ASME Conf. on Engineering Systems Design and Analysis, Paper ESDA2006-95146, pp.1-6, held at Torina, Italy, July 4-7, 2006.

2005

- [23] S.Z. Qamar, A.K. Sheikh, **A.F.M. Arif**, T. Pervez: "Fracture Toughness of Extrusion Die Materials at Different Tempering and Operating Temperatures", Second Int. Conf. on Advances in Production & Processing of Aluminum (APPA'2005), pp. (III-4)1-12, held in Bahrain, 5-7 Dec 2005.
- [24] M.K. Raza, A.K. Sheikh, S.Z. Qamar, **A.F.M. Arif**: "Extrusion Product Quality Using Some SPC Tools", Second Int. Conf. on Advances in Production & Processing of Aluminum (APPA'2005), pp. (IV-6)1-14, held in Bahrain, 5-7 Dec 2005.
- [25] **A.F.M. Arif**, A.K. Sheikh, K. Raza, M. Inam, S.Z. Qamar: "A Review of Some Surface Finish Defects Appearing on Aluminum Extrusions", Proc. of Second Int. Conf. on Advances in Production & Processing of Aluminum (APPA'2005), pp. (IV-7)1-18, held in Bahrain, 5-7 Dec 2005.
- [26] **Abul-Fazal M. Arif**, M. Kamran Raza, Anwar Khalil Sheikh, Sayyad Zahid Qamar, and Muhammad Inam: "Analysis of Painting Defects During Aluminum Extrusion Using SPC Tools", Proc. of International Conference on Modeling, Simulation and Applied Optimization (ICMSAO), ISBN:9948-427-00-9 (held at Sharjah, UAE, 1-3 February 2005).

2004

- [27] **A.F.M. Arif** , B.S.Yilbas, and K. Al-Athel: "Effect of Recoil Pressure Intensity and Duration on the Residual Stresses Induced By Laser Shock Processing", Proc. of International Mechanical Engineering Conference (IMEC2004),

Volume on Recent advances in industry and different engineering disciplines, pp. 714-733 (held at Kuwait, 5-8 December 2004)

- [28] S.Z. Qamar, M. Younas, A. K. Sheikh, and **A.F.M. Arif**: “Fatigue Life Assessment of Extrusion Dies Using Monte Carlo Simulation” , Proc. of 3rd International Conference and Exhibition on Design and Production of Dies and Molds, pp. 169-176, 2004. (held at Bursa, Turkey, 17-19 June, 2004).
- [29] S.Z. Qamar , **A.F.M. Arif**, and A. K. Sheikh : “Extrusion Die Complexity — A Feature Based Characterization”, Proc. of 3rd International Conference and Exhibition on Design and Production of Dies and Molds, pp. 161-168, 2004. (held at Bursa, Turkey, 17-19 June, 2004).
- [30] S.Z. Qamar, A. K. Sheikh, **A.F.M. Arif** : “Die Life Prediction using a Form Feature Based Definition of Extrusion Shape Complexity”. Proc. Of the 3rd International Conference on Advanced Manufacturing Technology (ICAMT-2004), pp. 777-783, 2004. (held at Kuala Lumpur, Malaysia, 11-13 May 2004).
- [31] **A.F.M.Arif**, S.Z.Qamar, A.K.Sheikh: “An Investigation Into the Formation of Dead Metal Zone In Hot and Cold Metal Extrusion”. Proc. Of the 3rd International Conference on Advanced Manufacturing Technology (ICAMT-2004), pp. 941-947, 2004. (held at Kuala Lumpur, Malaysia, 11-13 May 2004).

2003

- [32] A.K. Sheikh, **A.F.M. Arif**, and S.Z. Qamar: “Predicting Fracture Toughness Values of Hot Work Tool Steels at Elevated Temperatures”, Proc. Of 8th Int. Sym. on Advanced Materials (ISAM2003), pp. 284-290, 2003. (held at Islamabad, Pakistan, 10-12 September 2003).
- [33] S.Z. Qamar, **A.F.M. Arif**, and A. K. Sheikh: “Extrusion Product Defects: A Statistical Study”, Proc. Of 8th Int. Sym. on Advanced Materials (ISAM2003), pp. 232-239, 2003. (held at Islamabad, Pakistan, 10-12 September 2003)
- [34] A.K. Sheikh, **A.F.M. Arif**, S.Z. Qamar: “Die-life probability and reliability in hot aluminum extrusion”, Proc. Of the Int. Conf. On Advances in Materials and Processing Technology (AMPT-2003), Vol. 2, pp. 1184-1189, 2003. (held at DCU, Dublin, Ireland, 8-11 July 2003).
- [35] S.Z. Qamar, **A.F.M. Arif**, A. K. Sheikh: “An investigation of Shape Complexity in Metal Extrusion”, Proc. Of the Int. Conf. On Advances in Materials and Processing Technology (AMPT-2003), Vol. 2, pp. 1178-1183, 2003. (held at DCU, Dublin, Ireland, 8-11 July 2003).

2002

- [36] N. Merah, A.Al-Zayer, A.Shuaib, **A.F.M.Arif**: "Finite element investigation of initial clearance effect on tube-to-tubesheet joint strength", Proc. Of 6th Saudi Engineering Conf., Vol. 5, pp. 371-384, 2002. (held at KFUPM, Dhahran, 14-17 Dec, 2002).
- [37] S.Z.Qamar, **A.F.M.Arif**, A.K.Sheikh, K.M.Al-Fuhaid: "Some observation of pressure distribution and die failure modes in hot extrusion", Proc. Of 6th Saudi Engineering Conf., Vol. 5, pp. 183-200, 2002. (held at KFUPM, Dhahran, 14-17 Dec, 2002).
- [38] A.K.Sheikh, **A.F.M.Arif**, S.Z.Qamar: "Determination of fracture toughness of tool steels", Proc. Of 6th Saudi Engineering Conf., Vol. 5, pp. 169-182, 2002. (held at KFUPM, Dhahran, 14-17 Dec, 2002).
- [39] **A.F.M.Arif**, A.K.Sheikh, S.Z.Qamar, M.K.Raza, K.M.Al-Fuhaid: "Product defects in aluminum extrusion and its impact on operational cost", Proc. Of 6th Saudi Engineering Conf., Vol. 5, pp. 137-154, 2002. (held at KFUPM, Dhahran, 14-17 Dec, 2002).

2001

- [40] **A.F.M Arif**, A.K. Sheikh, S.Z. Qamar, K.M. Al-Fuhaid: "Modes of die failure and tool complexity in hot extrusion of Al-6063", Proc. Of 16th Int. Conf. on Production Research (ICPR-16), pp. K4.1, held at Prague, 29 July – 3 August 2001.
- [41] **A.F.M. Arif**: "Finite Element Simulation of Extrusion to develop pressure charts", Proc. Of 16th Int. Conf. on Production Research (ICPR-16), pp. K4.3, held at Prague, 29 July – 3 August 2001.
- [42] **A.F.M Arif**, A.K. Sheikh, S.Z. Qamar, K.M. Al-Fuhaid: "Effect of ram speed & tool complexity on the extrusion of Al-6063", Proc. of Int. Conf. on Advances in Production & Processing of Aluminum (APPA'2001), pp. (8-1)1-14, held in Bahrain, 12-15 Feb 2001.

1997

- [43] **A.F.M. Arif** and T. Pervez: "Efficient constitutive evaluation procedures for finite deformation analysis", Proc. of Int. Conf. On Structure, Processing and Properties of Materials, SPPM'97, pp. C1-C10, held at BUET Dhaka (Bangladesh), 15-17 November, 1997.
- [44] T. Pervez and **A. F. M. Arif**: "A phenomenological model for elasto-plastic behavior of fiber reinforced laminated composites", Proc. of Int. Conf. On

Structure, Processing and Properties of Materials, SPPM'97, pp. D22-D31, held at BUET Dhaka (Bangladesh), 15-17 November 1997.

1996

- [45] **A.F.M.Arif**, J.Chattah and A.Ahmad: " A technology based approach to control engine exhaust emission in Pakistan", Proc. of SAARC workshop on Urban Air Control held at GIK Institute, Topi, 16-18 December, 1996.

1992

- [46] **A.F.M. Arif**: "Some applications of large deformation analysis in defense industry", Proc. of seminar on Research & Development in support of technology with military application, pp. 99-114, 1992. (held at Naval College of Engineering, Karachi, April 29, 1992).

1991

- [47] N. Zabaras and **A.F.M. Arif**: "A Tangent Stiffness Approach for Large Deformation Inelastic Problems with a Generalized Mid-Point Rule", Third International Conference on Constitutive Laws for Engineering Materials:Theory and Applications, (editors Chandra S. Desai, E. Krempl, G. Frantziskonis, and H. Saadatmanesh), pp. 783-786, 1991(conference held at the University of Arizona, Tucson, Arizona, January 7-12, 1991).

1990

- [48] N. Zabaras and **A.F.M. Arif**: "Unified Study of Rate-Dependent and Rate-Independent Solids in Finite Deformation Analysis", NUMETA 90 The Third International Conference on Advances in Numerical Methods in Engineering : Theory and Applications (editors G. N. Pande and J. Middleton), Vol. 2, pp. 886-893, 1990 (conference held at the University College of Swansea, U.K., January 7-11, 1990).

Editorial/Book Chapters/Books

- [1] Badr, H., M., **Arif, A.F.M**, Sheikh, A.K., Shuaib, A.N., Khan, Z., Khan, A.S., Tseng, A.A., Zikry, M.A. , Theme issue on modeling of metal forming processes , Arabian Journal for Science and Engineering 30 (1 C), pp. III-iv, 2005.

- [2] Sayyad Zahid Qamar, Anwar Khalil Sheikh, **A. F. M. Arif** and Tasneem Pervez, Using Monte Carlo Simulation for Prediction of Tool Life, Book title: Theory and Applications of Monte Carlo Simulations", ISBN 978-953-7619-X-X publisher INTECH., June 2010.
- [3] S.Z. Qamar, A.K. Sheikh, **A.F.M. Arif**, Modeling and analysis of aluminum extrusion: process, tooling, and defects, ISBN: 978-3-8443-3158-5, LAP Lambert Academic Publishing, Germany, 2011
- [4] Syed Sohail Akhtar and **Abul Fazal M. Arif**, Hot Extrusion Dies: Failure Analysis, Nitriding & Effect of Billet Quality, ISBN 978-3-8465-4512-6, LAP Lambert Academic Publishing, Germany, 2011.

Technical Reports

- [1] N. Zabararas and **A.F.M. Arif**: "Unified Study of Rate-Dependent and Rate-Independent Solids in Finite Deformation Analysis", Univ. of Minnesota Supercomputer Institute Research Report No. UMSI 89/126, August 1989.
- [2] N. Zabararas and **A.F.M. Arif**: " A Family of Integration Algorithms for Constitutive Equations in Finite Deformation Elasto-Viscoplasticity", Univ. of Minnesota Supercomputer Institute Research Report No. UMSI 90/56, April 1990.
- [3] **A.F.M. Arif** and N. Zabararas: "On the Performance of Two Tangent Operators for Finite Element Analysis of Large Deformation Inelastic Problems", Univ. of Minnesota Supercomputer Institute Research Report No. UMSI 90/150, August 1990.
- [4] N. Zabararas and **A.F.M. Arif**: "A Tangent Stiffness Approach for Large Deformation Inelastic Problems with a Generalized Mid-Point Rule", Univ. of Minnesota Supercomputer Institute Research Report No. UMSI 90/167, September 1990.
- [5] M. Sunar, **A. Arif**, B. Al-Bedoor, N. Hamadan, Y. Al-Nassar: "Analytical evaluation technique for storage tanks", Progress Report , Saudi-Aramco PN ME2205, March 2001.
- [6] M. Sunar, **A. Arif**, B. Al-Bedoor, N. Hamadan, Y. Al-Nassar: "Analytical evaluation technique for storage tanks", Final Report , Saudi-Aramco PN ME2205, February 2002.
- [7] **A.F.M Arif**, A.K. Sheikh, S.Z. Qamar: "Prediction of force required in metal extrusion of complex shapes", Final Report, KFUPM Funded Research project # FAST/2000-11, August 2002.

- [8] K. Rehman, **A.F.M.Arif**, M.H. Baluch, A. Al-Gadhib and O. Al-Amoudi: "Finite Element Analysis of Failure in Heat Transfer Line". Final Report, SABIC funded under the project number PN-CER2274, December 2003.
- [9] **A.F.M. Arif**, A.K. Sheikh, K. Raza, S.Z. Qamar, M. Inam: Final Report of the Project: Strategies To Produce Quality Products In Aluminum Extrusion (ARI Grant # ARI-012), June 2005.
- [10] **A.F.M. Arif** and B.S. Yilbas: Final Report of the Project: Simulation of a Computational Procedure for the Simulation of Laser Shock Processing (FT/2002-06), October 2005.
- [11] A.K.Sheikh and **A.F.M. Arif**: Final Report of the Project: Development of die life enhancement strategy for hot extrusion of aluminum alloys (FT/2001-20), April 2006.
- [12] A.K.Sheikh, M. Faisal, F. Sulaiman, **A.F.M. Arif**, M. Ahmed: Final Report of the Project: Assessing needs and developing an implementation strategy for introducing rapid prototyping, rapid tooling and virtual manufacturing technologies in Saudi Arabia (FT/2004-06), February 2006.
- [13] **A.F.M. Arif**, A.K. Sheikh, Z. Gasem, M. Younas: Final report of the Project: Die Life Improvement For Hot Extrusion Of Aluminum Alloys (KACST ARP-23-19), July 2008.
- [14] **A.F.M. Arif** and B.S. Yilbas: Final Report of the Project: Numerical & Experimental Investigation of Thermal Stress Development during Laser Cutting of Sheet Metal (SB070014), July 2008.
- [15] F. Al-Sulaiman, Y. Khulief, A. Al-Qutub, **A.F.M. Arif**, R. Ben Mansoor: Final Report of the Project: Effects of High Vanes Passing Frequency of the Turbine Boiler Feed Pump (BFPT) on Damaging other related/connected Components. (CER 2289), August 2008.
- [16] **A.F.M. Arif** and A.K. Sheikh: Final Report of the Project: Effect of Billet Quality on the Hot Extrusion Die Life (SB070023), December 2008.
- [17] **A.F.M. Arif** and B.S. Yilbas: Final Report of the Project: Numerical & Experimental Investigation of Thermal Stress Development during Laser Cutting of Sheet Metal (SB070014), December 2008.
- [18] **A.F.M. Arif** and A.K. Sheikh: Final Report of the Project: Effect of Surface Preparation and profile Geometry on the Case-Hardening of H13 Tool Steel (SB080002), Oct 2009..
- [19] **A.F.M. Arif** and B.S. Yilbas: Final Report of the Project: Numerical Modeling of Laser Welding Process using Volumetric Moving Heat Source (SB080003), Dec 2010.

- [20] **A.F.M. Arif**, S.M. Zubair and M. Inam: Final Report of the Project: Thermal-Structural Performance of Advanced Composite Materials for Pin Fin Applications (SB090009, June 2010).
- [21] S.M. Zubair, **A.F.M. Arif**, M.T.Mustafa, M. Inam: Final Report of the Project: Performance Enhancement of fins (FT100016), November, 2011.

Design Procedures

- [1] **A.F.M. Arif** : “Procedure for Unit Schedule Sheet (USS)”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.EGP.06, July 1994.
- [2] **A.F.M. Arif** : “Engineering Bill of Materials (BOM)”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.EGP.08, June 1994.
- [3] **A.F.M. Arif** : “Design Review”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.ECP.06, November 1994.
- [4] **A.F.M. Arif** : “Control of Standards and Specifications”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.ECP.09, April 1994.
- [5] **A.F.M. Arif** and S. Perveen: “Value or Cost-Reduction Engineering”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.ECP.11, June 1994.
- [6] **A.F.M. Arif** : “Print Requisition for Any Design Documentation”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.EDP.05, April 1994.
- [7] **A.F.M. Arif** : “Classified document / Drawing Security”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.EDP.07, January 1995.
- [8] **A.F.M. Arif** and Abbas Ali : “Discarding Obsolete Documents”, ISO 9001 Engineering Procedure for Trans Mobile Ltd., TML.EDP.08, January 1995.

Patents and Patent Applications

Patents Issued

- [1] Bekir S. Yilbas, **A.F.M. Arif**, Cihan Karatas, Abdul Aleem B. Jabbar, "*Laser Gas Assisted Nitriding of Alumina Surfaces*", **Patent No. US 8,147,926**, Date of Patent: April 3, 2012.
- [2] Bekir S. Yilbas and **Abul Fazal M. Arif**, "*Method of Modeling Residual Stresses During Laser Cutting*", **Patent No. US 8,155,933**, Date of Patent: April 10, 2012.

Patent Applications Filed

- [3] **Abul Fazal M. Arif**, Sulaman Pashah, Syed M. Zubair, "*Method of Modeling Thermal Problems Using Non-Dimensional Finite Element Analysis*", **Patent Application No. U.S. 13/253778**, Filed with the U.S. Patent and Trademark Office (USPTO) on October 05, 2011 (Patent Pending).
- [4] Lifang Li, Steven Dubowsky, Andres George Kecskemethy Daranyi, **Abul Fazal M. Arif**, "*Precision Parabolic Mirror Structures*", **Patent Application No. U.S. 13/095115**, Filed with the U.S. Patent and Trademark Office (USPTO) on April 27, 2011 (Patent Pending).

Technology Disclosures Submitted

- [5] **Abul Fazal M. Arif**, Osama Hasan, "*Modeling and Validation Approach for PV Module using Layered Finite Element*", submitted to KFUPM Intellectual Assets Office on December 26, 2012.
- [6] M. Usama Siddiqui, **Abul Fazal M. Arif**, Syed M. Zubair, "*Design of a Novel Heat Exchanger for Photovoltaic Panel Cooling*", submitted to KFUPM Intellectual Assets Office on December 26, 2012.

Professional Activities

Conference / Workshop Organization

- [1] Member, Scientific Committee, 2nd Saudi Engineering Forum (SEF2009), held at King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia, March 28-30, 2009.
- [2] Member, Conference Organizing Committee, Int. Conf. on Advances in Materials and Processing Technology (AMPT-2008), held in Bahrain, 2-5 November, 2008.
- [3] Member, International Advisory Committee, International Conference on “Recent Advances in Material Processing Technology (RAMPT’05)”, held at National Engineering College, K.R. Nagar, India, February 23-25, 2005.
- [4] Member, Scientific Committee, 13th Annual (International) conf. of Mechanical Engineering (ISME2005), held at Isfahan University, Iran, May 17-19, 2005.
- [5] Member of the Organizing Committee of Workshop on “Vibration in Rotating Machinery”, held at KFUPM, Saudi Arabia, April 29-May 1, 2000.
- [6] Coordinator for the Workshop on “Product Development Solutions for Design-Through-Manufacturing”, organized by Center for Manufacturing Productivity and Technology Transfer (CMPT), held at GIK Institute, Pakistan, August 3-5, 1998.
- [7] Member of the Organizing Committee of The South Asian Association for Regional Cooperation (SAARC) Workshop on “Urban Air Quality”, held at GIK Institute, Pakistan, December 16-18, 1996.

Conference Attendance

- [1] 15th European Conference On Composite Materials ECCM15, June 24-28, 2012, Venice, Italy.
- [2] 26th International Conference on Surface Modification Technologies SMT26, , June 20-22, 2012, Ecole Centrale de Lyon, France.
- [3] ASME 2011 Pressure Vessels and Piping Conference, July 17-21, 2011, Baltimore, Maryland, USA.
- [4] Int. Conference on Applied Mechanics, Materials, and Manufacturing (ICAMMM-2010), Dec 13-15, 2010 at Sultan Qaboos University, Oman.
- [5] ASME International Mechanical Engineering Congress & Exposition (IMECE2010), November 12-18, 2010, Vancouver, British Columbia, Canada.
- [6] ASME InterPack’09 Conference held at San Francisco, USA, 19-23 July, 2009.
- [7] Int. Conference on Advances in Materials and Processing Technology (AMPT-2008), Bahrain, November 2-5, 2008.
- [8] 4th Int. Conference and Exhibition on Design and Production of Machines and Dies/Molds, Altın Yunus Hotel in Çeşme, Turkey, 21-23, 2007.

- [9] Int. Conference on Modeling, Simulation and Applied Optimization (ICMSAO), American University of Sharjah, UAE, February 1-3, 2005.
- [10] Int. Mechanical Engineering Conference (IMEC2004), Kuwait, Dec 5-8, 2004.
- [11] 3rd Int. Conference and Exhibition on Design and Production of Dies and Molds, Bursa, Turkey, June 17-19, 2004
- [12] 3rd Int. Conference on Advanced Manufacturing Technology (ICAMT-2004), Kuala Lumpur, Malaysia, May 11-13, 2004.
- [13] Int. Conference on Advances in Materials and Processing Technology (AMPT-2003), Dublin City University, Dublin, Ireland, July 8-11, 2003.
- [14] 6th Saudi Engineering Conf. held at King Fahd University of Petroleum & Minerals (KFUPM), Dhahran, Saudi Arabia, December 14-17, 2002.
- [15] The First International Bhurban Conference on Applied Sciences and Technologies (IBCAST), Bhurban, Pakistan. June 10-15, 2002,
- [16] 16th Int. Conf. on Production Research (ICPR-16), Prague, Czech Republic, July 29-August 3, 2001.
- [17] Int. Conference on Advances in Production & Processing of Aluminum (APPA'2001), Manama, Bahrain, February 12-15, 2001.
- [18] Int. Conference on Structure, Processing and Properties of Materials, SPPM'97, Dhaka, Bangladesh, November 15-17, 1997.
- [19] SAARC workshop on Urban Air Control held at GIK Institute, Topi, Pakistan, December 16-18, 1996.

Presentations and Invited Lectures

- [1] Effect of Carbon Nanotubes (CNT) on the Thermal Conductivity of Nanocomposites Using a New RVE Approach, 15th European Conference On Composite Materials ECCM15, June 24-28, 2012, Venice, Italy.
- [2] Stress Field in the Top Coat of Thermal Barrier Coatings due to the Formation of YVO₄ – A Numerical Study, 26th International Conference on Surface Modification Technologies SMT26, , June 20-22, 2012, Ecole Centrale de Lyon, France.
- [3] Optimization of pipe repair sleeve design, ASME 2011 Pressure Vessels and Piping Conference, July 17-21, 2011, Baltimore, Maryland, USA.
- [4] Residual Stress Development during Submerged-Arc Welding of Spirally Welded Pipes: Experimental, Statistical and Numerical Study, International Conference on Applied Mechanics, Materials, and Manufacturing (ICAMMM-2010), December 13-15, 2010 at Sultan Qaboos University, Muscat, Oman.
- [5] Effect of Billet Quality on Aluminum Extrusion Die life: Statistical, Microstructural and Numerical Investigation, International Conference on Applied Mechanics, Materials, and Manufacturing (ICAMMM-2010), December 13-15, 2010 at Sultan Qaboos University, Muscat, Oman.
- [6] Thermal and Structural Response of Pin Fin for Different Interface Conditions, ASME International Mechanical Engineering Congress &

- Exposition (IMECE2010), November 12-18, 2010, Vancouver, British Columbia, Canada.
- [7] Thermal-Structural Performance of Orthotropic Pin Fin Applications, ASME InterPack'09 Conference held at San Francisco, USA, 19-23 July, 2009.
 - [8] On the Modeling of Laser as a Moving Distributed Volumetric Heat Source for Laser Cutting Simulation at Int. Conf. on Advances in Materials and Processing Technology (AMPT-2008), Bahrain, November 2-5, 2008.
 - [9] Analysis of Painting Defects During Aluminum Extrusion Using SPC Tools at International Conference on Modeling, Simulation and Applied Optimization (ICMSAO), American University of Sharjah, UAE, February 1-3, 2005.
 - [10] Effect of Recoil Pressure Intensity and Duration on the Residual Stresses Induced By Laser Shock Processing at Int. Mechanical Engineering Conference (IMEC2004), Kuwait, December 5-8, 2004.
 - [11] Fatigue Life Assessment of Extrusion Dies Using Monte Carlo Simulation at 3rd Int. Conf. and Exhibition on Design and Production of Dies and Molds, Bursa, Turkey, June 17-19, 2004
 - [12] An Investigation Into the Formation of Dead Metal Zone In Hot and Cold Metal Extrusion at 3rd Int. Conf. on Advanced Manufacturing Technology (ICAMT-2004), Kuala Lumpur, Malaysia, May 11-13, 2004.
 - [13] An investigation of Shape Complexity in Metal Extrusion at Int. Conf. on Advances in Materials and Processing Technology (AMPT-2003), Dublin City University, Dublin, Ireland, July 8-11, 2003.
 - [14] Nonlinear Finite Element Analysis in Mechanical Engineering at Mechanical Engineering Research seminar, KFUPM, 2003.
 - [15] Product defects in aluminum extrusion and its impact on operational cost at 6th Saudi Engineering Conf. held at King Fahd University of Petroleum & Minerals (KFUPM), Dhahran, Saudi Arabia, December 14-17, 2002.
 - [16] Introduction to Nonlinear Finite Element Analysis (as invited lecture) at the First International Bhurban Conference on Applied Sciences and Technologies (IBCAST), Bhurban, Pakistan. June 10-15, 2002.
 - [17] Applications of Nonlinear Finite Element Analysis in Design (as invited lecture) at the First International Bhurban Conference on Applied Sciences and Technologies (IBCAST), Bhurban, Pakistan. June 10-15, 2002.
 - [18] Applications of Nonlinear Finite Element Analysis in Manufacturing (as invited lecture) at the First International Bhurban Conference on Applied Sciences and Technologies (IBCAST), Bhurban, Pakistan. June 10-15, 2002.
 - [19] Finite Element Simulation of Extrusion to Develop Pressure Charts at 16th Int. Conf. on Production Research (ICPR-16), Prague, Czech Republic, July 29-August 3, 2001.
 - [20] Modes of Die Failure and Tool Complexity in Hot Extrusion of Al-6063 at 16th Int. Conf. on Production Research (ICPR-16), Prague, Czech Republic, July 29-August 3, 2001.
 - [21] Prediction of Force Required in Metal Extrusion of Complex Shapes at

- Mechanical Engineering Research seminar, KFUPM, 2001.
- [22] Effect of Ram Speed and Tool Complexity on Extrusion Pressure at Int. Conf. on Advances in Production & Processing of Aluminum (APPA'2001), Manama, Bahrain, February 12-15, 2001.
 - [23] Computational Aspects of a Finite Element Procedure for Large Deformation Problems at Mechanical Engineering Research seminar, KFUPM, 2000.
 - [24] Efficient Constitutive Evaluation Procedures for Finite Deformation Analysis at Int. Conf. on Structure, Processing and Properties of Materials, SPPM'97, Dhaka, Bangladesh, November 15-17, 1997.
 - [25] A Technology Based Approach to Control Engine Exhaust Emission in Pakistan at SAARC workshop on Urban Air Control held at GIK Institute, Topi, Pakistan, December 16-18, 1996.

Engineering Educational Workshop, Conference and Meetings

- [1] ABET PEV training at Baltimore BWI Hilton, Linthicum, MD, USA, May 22-23, 2010.
- [2] ABET Institute for the Development of Excellence in Assessment Leadership (IDEAL), held at Baltimore, MD, USA, August 3-7, 2009.
- [3] ABET Annual Meeting and Commission Summit, held at Incline Village, Nevada, USA, 31 Oct-2 Nov, 2007.
- [4] Second International Conference on Engineering Education & Training organized by the Kuwait University. April 09-11, 2007.
- [5] ABET Criteria 2 and 3: Program Educational Objectives and Program Outcomes, workshop by Dr. Edwin Wiggins from Webb Institute, USA, organized by ABET Steering Committee , Dhahran, Saudi Arabia, 5-6 March, 2007.
- [6] Developing program objectives and learning outcomes, organized by the Program Assessment Center, Deanship of Academic Development, KFUPM, September 19, 2006.
- [7] Introduction to WebCT, Deanship of Academic Development, KFUPM, March 2006.

Engineering Educational Presentations and Seminars

- [1] The ABET Accreditation Visit from the Faculty Perspective at Civil Engineering Department Council Meeting organized by KFUPM ABET Steering Committee, Dhahran, May 17, 2009.
- [2] Program Assessment Process for Continuous Quality Improvement (CQI) at workshop on Program Assessment organized by KFUPM ABET Steering Committee, Dhahran, November 16, 2008.
- [3] Direct Assessment of Program Outcomes: Using Simplified Model at workshop on Direct Measure for Program Assessment organized by KFUPM

ABET Steering Committee, Dhahran, December 12, 2006.

Reviewed Papers for Journals (selected)

ASME Journal of Manufacturing Science and Engineering; Finite Elements in Analysis and Design; Material Science & Engineering: A; Arabian Journal for Science and Engineering; Journal of Materials Processing Technology; Int. Journal of Impact Engineering; Surface and Coatings Technology

Membership in Editorial Board

- [1] Co-Lead Technical Editor for the theme issue of *Arabian Journal for Science & Engineering (AJSE)* on the “Modeling of Metal Forming Processes”, Volume 30, Number 1C, June 2005.
- [2] Member, Editorial Board, *Journal of Manufacturing Engineering* (ISSN No.0973-6867), Published quarterly by Society of Manufacturing Engineers, India. <http://www.smeindia.org/Journal/index.php>.
- [3] Member, International Editorial Advisory Board, NED University Journal of Engineering Research, Published biannually by NED University of Engineering & Technology, Karachi, Pakistan.
<http://www.neduet.edu.pk/NED-Journal/ediBoard.html>

University, Departmental and Public Service

Participation in Committees

Name of Committee	Year	Formed by	Position	Type
ME Faculty Search Committee	2012/2013	Department	Chairman	Standing
DSR Best Research Project Award Academic Committee	2011/2012	University	Member	Ad-hoc
ABET Steering Committee	2011/2012	University	Member	Standing
ME Faculty Search Committee	2011/2012	Department	Chairman	Standing
ABET Steering Committee	2010/2011	University	Member	Standing
ME Faculty Search Committee	2010/2011	Department	Chairman	Standing
DSR Project Outcome Committee	2009/2010	University	Member	Ad-hoc
DSR Conference Committee	2009/2010	University	Member	Standing
ABET Steering Committee	2009/2010	University	Member	Standing
ME Teaching Assignment Committee	2009/2010	Department	Chairman	Standing
DSR Research Award Committee	2008/2009	University	Member	Ad-hoc
DGS Interview Team for Pakistan	2008/2009	University	Member	Ad-hoc
DGS Graduate Seminar Organizing	2008/2009	University	Member	Ad-hoc
CER Self-Assessment Team	2008/2009	University	Member	Ad-hoc
ABET Steering Committee	2008/2009	University	Member	Ad-Hoc
ABET Quality Assurance Committee	2008/2009	University	Member	Ad-Hoc
Teaching Assignment Committee	2008/2009	Department	Member	Standing
Program Assessment Committee	2008/2009	Department	Member	Standing
Curriculum Revision Committee	2008/2009	Department	Member	Ad-hoc
Program Assessment Committee	2007/2008	University	Member	Ad-Hoc
ABET Steering Committee	2007/2008	University	Member	Ad-Hoc
ME ABET Committee	2007/2008	Department	Member	Ad-Hoc
Curriculum & Academic Affairs	2007/2008	Department	Member	Standing
ME ABET Committee	2006/2007	Department	Chairman	Ad-Hoc
Align Departmental Committees	2006/2007	Department	Member	Ad-Hoc
Computer Programming Language	2006/2007	College	Member	Ad-Hoc
Teaching Assignment Committee	2005/2006	Department	Member	Standing
Curriculum Development Committee	2005/2006	Department	Chairman	Standing
Curriculum Revision Committee	2004/2005	Department	Member	Ad-Hoc

Curriculum Development Committee	2004/2005	Department	Member	Standing
ME Self Assessment Program Team	2003/2004	Department	Member	Ad-Hoc
Curriculum/Textbook Committee	2003/2004	Department	Member	Standing
ME Self Assessment Program Team	2002/2003	Department	Member	Ad-Hoc
Curriculum/Textbook Committee	2002/2003	Department	Chairman	Standing
Annual Report Committee	2002/2003	Department	Member	Ad-Hoc
ME/AME Program Review	2001/2002	Department	Member	Ad-Hoc
Graduate Committee	2001/2002	Department	Member	Ad-Hoc
Curriculum Committee	2001/2002	Department	Chairman	Standing
Continuing Education Committee	2001/2002	Department	Member	Standing
Teaching & Advising Award	2000/2001	Department	Member	Ad-Hoc
Graduate Committee	2000/2001	Department	Member	Standing
Curriculum Committee	2000/2001	Department	Member	Standing
Teaching & Advising Award	1999/2000	Department	Member	Ad-Hoc
Student Advising Committee	1999/2000	Department	Member	Standing
Curriculum Committee	1999/2000	Department	Member	Standing
Computer Utilizing Committee	1999/2000	Department	Member	Standing
Teaching and Advising Awards	1998/1999	Department	Member	Ad-Hoc

Other Committees and Groups

- [1] Served as chairman and member of several faculty promotion committees.
- [2] Member of Materials and Manufacturing group
- [3] Member of Design, Dynamics and Control group.
- [4] Member/Chairman of several Ph.D. Comprehensive Examination Committee
- [5] Member of M.Sc. Theses defense committees
- [6] Served as chairman and member of several Senior Project and Coop presentation evaluation committees.