



EDUCATION

2004

Aachen Uni. of Technology
RWTH- Aachen, Germany.
(PhD Metallurgical Engineering)
Grade: Very Good

2002

Aachen Uni. of Technology
RWTH-Aachen, Germany.
(MSc. in Metallurgical Engineering)
Grade: Good

1997

School of Engineering
Cairo Uni. Egypt.
(BSc. In Metallurgical Engineering)
Grade: Very Good (1st honors)

Summary of Skills

- Failure analysis
- Expert Witness
- Materials characterization
- R&D, Welding, Foundry and Corrosion
- Client's interface and Business development
- Expert in operating SEM, EDX, HIP, XRF, OES, TGA, DSC, LOM

Workshops & Training

- Expert Witness Courses, Bond Solon, London, UK
- Corrosion Engineering Level II
- Composite materials
- NDT in non-metallic materials
- Polymers, composites and construction materials

Affiliations

- Chartered Engineer (CEng), Engineering Council, UK
- Institute of Materials, Minerals and Mining- UK (MIMMM)
- Institute of Professional Engineers- NZ (IPENZ)
- Consultant Engineer, Syndicate of Engineers, Egypt
- IOSH

Languages

Arabic (native), English & German (very good), Japanese (limited)

PROFILE

Academically, a Chartered Metallurgical Engineer, registered at the UK Engineering Council, recognised as a Professional Engineer by the Institute of Professional Engineers, NZ, and as a Technical Consultant by the Engineers Syndicate, Egypt. Many years of practical hands-on experience in the field of Metallurgy and Materials Science. Strong academic qualifications in Metallurgical Engineering from the Steel Institute of the Technical University of Aachen (IEHK, RWTH-Aachen), Germany. Fellow of Kyoto Uni., Japan.

Professionally, proudly worked as a Materials/ Corrosion and Failure Analysis Metallurgist over the past 10 years in Egypt and overseas in Asian and European countries. Proven track record of success with strong analytical skills. Authored and presented many publications in peer-review journals and international conferences.

WORK EXPERIENCE

METMAT Forensics Ltd. London, UK

Jan. 2021 | Principal Forensics Materials Consultant

- Expert witness, failure analysis & forensic engineering consultancy services.

Engineering Forensics Ltd. Birmingham, UK

Oct. 2018 – Jan. 2021 | Laboratory Manager & Principal Materials Consultant

- Setting-up the materials characterization lab., failure analysis, TP inspection, on-site examination, project management from design, execution through reports preparation and submission, coaching, expert witnessing, preparation of documents for UKAS accreditation.

IRC, Net Shape Advanced Materials and Processing Laboratory, University of Birmingham, UK

April 2018 | R&D Metallurgical Engineer (FTC)

- Additive manufacturing (3D Printing) of Al-Si alloys using Selective Laser Melting machine (SLM), powder characterization, process development.

Central Metallurgical R&D Institute, Cairo, Egypt

2015 – 2018 | R&D Metallurgical Engineer

- Deliver tailored-prepared training courses to young engineers and technicians from the industry. Offer technical consultancy to O&G, metal, power, defense and automotive industry, carry out R&D activities on metals and alloys and powder metallurgical manufactured parts, coach and mentor of technicians, engineers and research assistants.

Maersk Oil Qatar, Doha, Qatar

2012 - 2015 | Materials & Corrosion Engineer

- Follow up the retrieval/installation/evaluation of corrosion coupons, ER probes, chemical injection points, etc.), perform failure analysis and assessment of damage mechanisms as per codes and standards, corrosion trend analysis using CREDO, corrosion assessment and inspection of topside piping, risers, caissons, dead-legs and subsea pipelines, ILI, CIP/CC points, preparation of task risk assessment, assist in the preparation and implementation of the RBI Methodology, materials evaluation for the CSCC-Project,

Exova (currently Element), Abu Dhabi, UAE

2009 – 2012 | Senior Failure Investigation Specialist

- Carry out failure analysis in a commercial UKAS accredited materials testing laboratory, perform materials testing and characterization, metallography, SEM fractography, equipment calibration, welding testing, WPS, PQR, site visits and sampling, maintain HSE regulations, contribute to achieve the KPIs of financial and strategic targets, client interfacing, contracts negotiation, business development, training and coaching of young engineers.

Greater Cairo Foundries, Cairo, Egypt

2007 – 2009 | QC Metallurgical Engineer

- Manage three induction furnace melting operations, technical support and troubleshooting in the cast house, casting practice development, update QMS, Heat treatment of castings.

Mitsubishi Materials Corporation, Kyoto, Japan

2005 – 2007 | R&D Engineer

- R&D on powder metallurgical manufactured metallic foams, optimization sintering parameters, foam metals testing, and characterization.

List of Publications

- 1- Mohamed Shehata Aly, Fracture of Open- Cell Nickel Foams under Quasi Static Tensile Loading, *Journal of Materials Engineering and Performance* 19, Issue 9, 1306- 1310 (2010).
- 2- Mohamed Shehata Aly, Effect of Pore Size on the Tensile Behaviour of Open Cell Ti Foams: Experimental Results, *Materials Letters*, volume 64, 935–937 (2010).
- 3- Mohamed Shehata Aly, Tensile Properties of Open Cell Nickel Foams, *Materials and Design* 31 (2010) 2237–2240.
- 4- Shojiro Ochiai, Satoshi Nakano; Yuya Fukazawa, Mohamed Shehata Aly, Hiroshi Okuda, Komei Kato, Takeshi Isobe, Koichi Kita, Keiichi Honma, Tensile Deformation and Failure Behaviour of Open Cell Nickel and Copper Foams, *Materials Transactions*, Vol. 51, No. 4, 699- 706 (2010).
- 5- Shojiro Ochiai, Satoshi Nakano; Yuya Fukazawa, Mohamed Shehata Aly, Hiroshi Okuda, Komei Kato, Takeshi Isobe, Koichi Kita, Keiichi Honma, Change of Young's Modulus with Increasing Applied Tensile Strain in Open Cell Nickel and Copper Foams, *Materials Transactions*, Vol. 51, No. 5, 925 to 932 (2010).
- 6- Mohamed Shehata Aly, A. Almajid, S. Nakano, S. Ochiai, Fracture of open cell copper foams under tension, *Materials Science and Engineering A*, 519, Issues 1-2, 211-213 (2009).
- 7- A.A. Aal, Mohamed Shehata Aly, Electroless Ni-Cu-P Plating onto Open Cell Stainless Steel Foam, *Applied Surface Science* 255, 13-14 (2009).
- 8- Mohamed Shehata Aly, Pore Size Effect on the Tensile Properties of Open- Cell Stainless Steel Metallic Foams, *Proceeding of Metals Processing and Manufacturing Conference MPM*, Cairo, Egypt November 19- 22 (2007).
- 9- Mohamed Shehata Aly, Y. Fukasawa, K. Morishita, H. Okuda, S. Ochiai, K. Kato, K. Kita, K. Honma, Determination of the Stress Acting on the Individual Cells of Open-cell Stainless Steel Foams, *Proceeding of 5th Int. Conference on Porous Metals and Metallic Foams*, Canada, 5-7 September 2007.
- 10- Mohamed Shehata Aly, Y. Fukasawa, K. Morishita, H. Okuda, S. Ochiai, K. Kato, K. Kita, K. Honma, Open cell foams offer nickel a new twist in battery design, *Metal Powder Report* 62, 7 (2007) 26-30.
- 11- Mohamed Shehata Aly, Behaviour of closed cell aluminium foams upon compressive testing at elevated temperatures: Experimental results, *Mater. Lett.* 61 (2007) 3138- 3141.
- 12- Mohamed Shehata Aly, Y. Fukasawa, K. Morishita, H. Okuda, S. Ochiai, K. Kato, K. Kita, K. Honma, On the Tensile Behavior of Open- Cell Stainless Steel Foams, *Fourth Assiut University Int. Conf. on Mech. Eng. Advanced Tech. For Indus. Prod. (MEATIP4)*, December 12-14 (2006).
- 13- Mohamed Shehata Aly, Y. Fukasawa, K. Morishita, H. Okuda, S. Ochiai, K. Kato, K. Kita, K. Honma, Tensile Behavior of Open- cell Stainless Steel Metallic Foams, *Autumn Meeting of the Japan Institute of Metals*, Niigata, Japan, 2006.
- 14- Y. Fukasawa, Mohamed Shehata Aly, K. Morishita, S. Ochiai, H. Okuda, K. Kato, K. Kita, K. Honma, Fracture Deformation of Porous Nickel, *Autumn Meeting of the Japan Institute of Metals*, Niigata, Japan, 2006.
- 15- Mohamed Shehata Aly, W. Bleck, W. Dahl, High Temperature Mechanical Properties of Cast as well as Powder Metallurgical Manufactured Metallic Foams, *Dr.-Ing. Dissertation*, IEHK, RWTH- Aachen, Germany 2004.
- 16- Mohamed Shehata Aly, Wolfgang Bleck and Paul-Friedrich Scholz, **how** metal foams behave if the temperature rises, *Metal Powder Report*, Volume 60, Issue 9, pp. 38-45, October 2005.
- 17- Mohamed Shehata Aly, Mechanische Eigenschaften von niedriglegierten Stahlschäumen unter hohen Temperaturen, *Annual Report aus dem Institut für Eisenhüttenkunde*, 2004.
- 18- S. Angel, M. Shehata Aly, W. Bleck, Entwicklung von offenporigen Schäumen aus Nickelbasislegierungen und intermetallischen Phasen, *SFB-Ergebnisbericht*, 2004.
- 19- Mohamed Shehata Aly, Hochtemperaturdruckversuche an metallischen Schäumen, *Mitteilungen Annual Report aus dem Institut für Eisenhüttenkunde*, Mainz Verlag, pp. 87, 2003.
- 20- Mohamed Shehata Aly, Wolfgang Bleck, High Temperature Compressive Deformation of Alporas (AlCaTi) Foams, *Proceeding International Conference on Cellular Metals and Metal Foaming Technology: Manufacture, Properties, Applications* (ed. J. Banhart et al.), Berlin, Germany, pp. 355-358, June 2003.
- 21- S. Angel, U. Mohr, Mohamed Shehata Aly, P.-F. Scholz, W. Bleck, Functional and Structural Characteristics of Metallic Foams on Base of Low-alloyed and High Grade Steels, *Euromat 2003*, Switzerland.
- 22- Angel, S., Bleck, W., Mohr, U., Aly, M. S., Scholz, P.-F.: Herstellung und Eigenschaften von Stahlschaum nach dem SchlickerReaktionsSchaumSinter (SRSS)- Verfahren. *Hagener Pulvermetallurgisches Symposium*, eingeladener Vortrag, November 2003.
- 23- U. Mohr, Mohamed Shehata Aly, W. Bleck, P.-F. Scholz, Processing of Open-Cell Steel Foams by the SRFS-Process: State of the Art and Development Potentialities, *Proceedings of Materials Week, International Congress Centre Munich*, 2002.
- 24- M. Shehata Aly, U. Mohr, W. Bleck, Production of Slip Reaction Foam on Base of Steel Powders with Special Emphasis on Improving the Sintering Process, *Master Thesis*, IEHK, RWTH- Aachen, Germany, 2002.

List of completed Projects- UK (partial)

- 1- Site investigation and materials analysis of a failed crane
- 2- Metallurgical analysis of braided flexible hose
- 3- Microscopic analysis of sand sample
- 4- Metallurgical analysis of cracked lead water pipe
- 5- Failure analysis of corroded copper pipe
- 6- Investigation of escape of water incident from an embedded copper pipe section
- 7- Metallurgical analysis of external expansion vessel
- 8- Metallurgical analysis of a threaded plastic adapter
- 9- Metallurgical analysis of corroded square iron plug
- 10- Failure investigation of corroded flexible hoses
- 11- Metallurgical analysis of corrugated flexible hose
- 12- Metallurgical analysis of corroded cylinder liners from a diesel generator
- 13- Metallurgical analysis of a failed float plastic valve
- 14- Visual inspection of a damaged intermediate bulk container (IBC)
- 15- Metallurgical analysis of a failed 2-stage valve
- 16- Metallurgical analysis of a defective washing machine inlet hose
- 17- Investigation of a failed plastic cartridge from a pressure reducing valve (PRV)
- 18- Metallurgical analysis of fractured copper tubes
- 19- Metallurgical investigation of a collapsed wind turbine tower
- 20- Failure analysis of a failed nut made from brass alloy
- 21- Metallurgical analysis of hot water storage cylinder
- 22- Failure analysis of a fractured timing chain tensioner and plastic guide rail
- 23- Metallurgical analysis of a brake caliper
- 24- Failure analysis of damaged glass panels
- 25- Failure investigation of a damaged refrigeration system
- 26- Metallurgical assessment of contaminated metallic samples
- 27- Metallurgical analysis of a failed plastic stopcock valve
- 28- Metallurgical investigation of a failed plastic fitting
- 29- Failure analysis of a failed TPR valve
- 30- Metallurgical analysis of a thermal mixing valve
- 31- Metallurgical analysis of a failed immersion heater
- 32- Failure analysis of a damaged crane
- 33- On the corrosion/degradation of alkaline batteries
- 34- Failure investigation of a defective chiller
- 35- Failure analysis of underground power cables
- 36- Microscopic examination of a damaged glass pane
- 37- Metallurgical analysis of a failed plastic pipework
- 38- Failure analysis of a damaged wind turbine rotor blade
- 39- Metallurgical analysis of a damaged cable granulator
- 40- Metallurgical analysis of a failed copper pipework T-Joint
- 41- Metallurgical analysis of a failed vacuum stainless steel cooker
- 42- Investigation of escape of water from a failed tube
- 43- In-situ visual examination of a failed heat exchanger
- 44- Analysis of agitators from anaerobic digester
- 45- SEM analysis of a cracked plastic adapter

- 46- Failure analysis of a faulty tiger loop
- 47- Metallurgical investigation of a failed sprinkler head

List of completed Projects- Middle East (partial)

- 48- Inspection and NDT Support Services in the DUKHAN Fields (Qatar Petroleum).
- 49-Cathodic Protection System Monitoring and Maintenance in RLTO and CLLNG Facilities (Qatar Gas).
- 50- Corrosion Monitoring Services Onshore and Offshore Locations (Qatar Petroleum).
- 51- Provision of Corrosion Monitoring Services (DOPET).
- 52- Cathodic Protection Works for Gas Operations at MESAIEED (Qatar Petroleum).
- 53- Metallurgical Analysis of Failed Weld/Joint Pipe (ADGAS, UAE).
- 54- Failure Analysis of Drillable Cast Iron (ADMA-OPCO, UAE).
- 55- Corrosion Analysis of Steel Spools (ADMA- OPCO, UAE).
- 56-Analysis of Retrieved Pothead, Thrust Bearing & Top Mechanical Seal Deposits Using SEM/EDS (Baker Hughes, UAE).
- 57- Metallurgical Analysis of Failed Wire Rope (GASCO, UAE).
- 58- Metallurgical Analysis of Fractured Stator's Upper Saver Sub (Halliburton Int., Kazakhstan).
- 59- Metallurgical Analysis of Corroded Steel Pipes (IOEC).
- 60- Metallurgical Analysis of Fractured Gas Turbine Rotor Disk (Mitsubishi Maintenance, UAE).
- 61- Corrosion Analysis of steel Tubes (Q- Chem, Qatar).
- 62- Failure Analysis of Butt-Welded Cracked Pipes (TEKFEN, Turkey).
- 63- Failure Analysis of Cracked Pulsation Dampener (Top Oil Field, UAE).
- 64- Metallurgical Analysis of Failed Bearing Samples (ZADCO, UAE).
- 65- Fracture Analysis of a broken Air Supply Tube (ADGAS, UAE).
- 66- Coating Analysis of Aluminium Panels (Chadwick, UAE).
- 67- Metallurgical Analysis of Fractured Elbow (Tubular Int., Bahrain).
- 68- Failure Analysis of Fractured Rotors (Clydeunion, UAE).
- 69- On site Investigation of a Fractured Kneader Shaft (EMAL, UAE)
- 70- Fracture Analysis of a Broken Bolt (Oman).
- 71- Metallurgical Analysis of a Fractured Arm Bracket (Galvaccoat, UAE).
- 72- Metallurgical Analysis of Cracked Welded Pipes (Kang Lim CSP Co. Ltd., Korea).
- 73- Failure Analysis of a Fractured Flex Hub (Schlumberger, KSA).
- 74- Metallurgical Analysis of Fractured Body-Holding (Schlumberger, KSA).
- 75- Corrosion Analysis of Drilling Pipes (Sterling Energy, IRAQ).
- 76- Metallurgical Analysis of a Fractured Boiler Tube (Borouge, UAE).
- 77- Corrosion Analysis of Cu-Ni Water Cooling Pipes (ZADCO, UAE).
- 78- TPI of Vibration Test of a Tunnel Fire Rated Suspended Ceiling (Samsung, UAE).
- 79- Metallurgical Analysis of a Perforated Gas Flow Line Pipe Section (ADCO, UAE).
- 80- Corrosion Analysis of Perforated Cu Tubes (ADMA- OPCO, UAE).
- 81- Metallurgical Analysis of a Fractured Stainless Steel Coupon Holder (ADMA, UAE).
- 82- Failure Analysis of a Fractured Drill Pin (Halliburton, UAE).
- 83- Metallurgical Analysis of a Fractured Upper Saver Sub (Halliburton, UAE).
- 84- Corrosion Analysis of a Perforated Pipe Section (Al Mabani, KSA).
- 85- Failure Analysis of a Cracked Shaft (UAE).
- 86- Metallurgical Analysis of a Fractured Drill Pipe Section (Al Mansoori, UAE).
- 87- Metallurgical Analysis of Broken Oil Field Product (Baker Hughes, UAE).
- 88- Failure Investigation of 1" Water Ball Valve (KSA).
- 89- Metallurgical Analysis of a Fractured 1" Fillet Welded Pipe (Crescent, UAE).
- 90- Metallurgical Analysis of a Broken Shaft (Oman).
- 91- Corrosion Analysis of Perforated Elbow (GASCO, UAE).

- 92- Metallurgical Analysis of Transverse Cracks on a Welded Plate Section (Lamprell, UAE).
- 93- Fracture Analysis of a broken Nippo Flange (McDermott ME, UAE).
- 94- Metallurgical Analysis of Fractured Anchor Screws (NMDC, UAE).
- 95- Failure Analysis of a Parted Jar (Sino gulf, Oman).
- 96- Metallurgical Analysis of Fractured Heavy Weight Drill Pipe (Sino gulf, Oman).
- 97- Failure Analysis of a Fractured Joint Pipe Section (Sipetrol, EGYPT).
- 98- Metallurgical Investigation of a Corroded Pipe Manifold (Taisei, UAE).
- 99- Metallurgical Analysis of a Fractured Weapon Slide (TAWAZUN, UAE).
- 100- Metallurgical Analysis of a Broken Shaft (TDW, UAE).
- 101- Metallurgical Analysis of a Fractured Shaft (TOTAL, UAE).
- 102- Corrosion Investigation of Storage Tank (Velosi, Qatar).
- 103- Metallurgical Analysis of a Fractured Valve Stem of 8"TK Ball Valve (ZADCO, UAE).
- 104- Third Party Inspection (TPI) of a Vibration Test of a Suspended Ceiling (Nurol, UAE).