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Professional Statement

I've completed my PhD from Materials Science Division under Mechanical Engineering Department, National University of Singapore, Singapore. In my PhD work, I've developed few new lead-free solders with exceptional properties and filed **two applications for US provisional patent, published five internationally referred journals and four conference papers**. I've published **three international journal and eleven international conference papers and submitted five more journal papers** in my two and half years post doctoral period at Qatar University where I had to cost a significant time for establishing lab set up. I have taught academic courses too. I'm a self-motivated, energetic, responsible and hardworking person who likes to take challenge. I like to work with a reputed institute as a researcher and academician which will provide me a good platform to utilize my research, teaching and administrative skills and will help me to grow up my career by fulfilling institution's goals.

Key Strength

- ❖ Strong communicator both written and oral
- ❖ Excellent problem solving skills
- ❖ Great analytical ability

Education

PhD (February, 2010)	Materials Science (Mechanical Engineering Department) National University of Singapore, Singapore. Specialization: Lead-free Solders, Materials Processing and Characterization Thesis Title: Development of New Tin Based Formulations Supervisor: Manoj Gupta
B.Sc. (November, 2004)	Mechanical Engineering Bangladesh University of Engineering and Technology (BUET). Class Rank: 12 out of 125 Thesis: Formation of Bubbles in Liquid

Research Focus

- ✚ Lead-free solder materials
- ✚ Materials processing by casting and powder metallurgy
- ✚ Magnesium based materials
- ✚ Nano-composites
- ✚ CO₂ utilization in metal based materials

Honors and Awards

- 2005-2009 'Research Scholarship' by National University of Singapore
1999-2004 'Technical Scholarship' by the Government of Bangladesh
1994-1996 'Junior School Scholarship' by the Government of Bangladesh

Professional Activities

- ❖ Member of ASME (2008-Present)
- ❖ Member of TMS (2008-Present)

Selected Peer-Reviewed Publications

Patents (US Provisional Application Filed):

- 1 M. Gupta, **M. E. Alam** and S. L. M. Nai, "High Strength and Ductile Sn-Mg and its Ternary Lead-Free Solder Alloys", US provisional patent application no. 61/245, 783 (2009).
- 2 M. Gupta and **M. E. Alam**, "Sn-Al Solder Alloys with Exceptional Ductility", US provisional patent application no. 61/100, 387 (2008).

Journal Publications:

- 1 **M. E. Alam**, S. Han, A. M. S. Hamouda, Q. B. Nguyen and M. Gupta, "Development of New Magnesium Based Alloys and Their Nanocomposites", *Journal of Alloys and Compounds*, 509 (2011) 8522-8529.
- 2 **M. E. Alam**, S. M. L. Nai and M. Gupta, "Development of High Strength Sn-Cu Solder Using Copper Particles at Nanolength Scale", *Journal of Alloys and Compounds*, 476 (2009) 199-206.
- 3 **M. E. Alam** and M. Gupta, "Effects of Sintering and Its Type on the Microstructural and Tensile Response of Pure Tin", *Powder Metallurgy*, 52 (2009) 105-110.
- 4 **M. E. Alam**, S. M. L. Nai and M. Gupta, "Effect of Amount of Cu on the Intermetallic Layer Thickness between Sn-Cu Solder and Cu Substrate", *Journal of Electronic Materials*, 38 (2009) 2479-2488.
- 5 **M. E. Alam** and M. Gupta, "Effect of Addition of Nano-Copper and Extrusion Temperature on the Microstructure and Mechanical Response of Tin", *Journal of Alloys and Compounds*, 490 (2010) 110-117.
- 6 S. M. L. Nai, J. V. M. Kuma, **M. E. Alam**, X. L. Zhong, P. Babaghorbani, M. Gupta, "Using Microwave Assisted Powder Metallurgy Route and Nano-Size Reinforcements to Develop High Strength Solder Composites", *Journal of Materials Engineering and Performance*, 19 (2010) 335-341.

- 7 **M. E. Alam**, A. M. S. Hamouda, S. Han, Q. B. Nguyen and M. Gupta, "Development of New AZ51 Magnesium alloy and its Al₂O₃ Nanocomposite", *Advanced Materials Research*, (Accepted).
- 8 **M. E. Alam**, A. M. S. Hamouda and M. Gupta, "Microstructural, Thermal and Mechanical Response of Magnesium Based AZ41/Al₂O₃ Nanocomposite with Varying Amount of Ca Addition", *Advanced Materials Research*, (Accepted).
- 9 **M. E. Alam**, A. M. S. Hamouda, Q. B. Nguyen and M. Gupta, "Improving microstructural and mechanical response of new AZ41 and AZ51 alloys through simultaneous addition of nano-sized Al₂O₃ particulates and Ca", (Submitted to *Composite Science and Technology*).
- 10 **M. E. Alam** and M. Gupta, "Development of High Strength Sn-Mg Solders with Reasonable Ductility" *Materials Science and Engineering: A*, (Submitted).
- 11 **M. E. Alam** and M. Gupta, "Development of New Lead-Free Sn-Al Solders with Exceptional Ductility", *Journal of Physics D: Applied Physics* (Submitted).
- 12 **M. E. Alam**, A. M. S. Hamouda and M. Gupta, "Development of High Strength New Lead-Free Eutectic Sn-Mg Solder", *Advanced Science Letters*, (Submitted).
- 13 **M. E. Alam**, A. M. S. Hamouda and M. Gupta, "Microstructure, Thermal and Mechanical Response of AZ51/Al₂O₃ Nanocomposite with 2 wt. % Ca addition", *Materials and Design*, (Submitted).
- 14 **M. E. Alam**, K. S. Tun, M. Gupta and A. M. S. Hamouda, "Enhancing Compressive Strength of New AZ Magnesium Alloys using Nano-Sized Alumina Particulates" (Manuscript Preparation in Progress).
- 15 **M. E. Alam**, A. M. S. Hamouda, and M. Gupta, "Improving Corrosion Resistance of AZ41 and AZ51 Alumina Nanocomposites by Adding Ca", (Manuscript Preparation in Progress).

Conference Publications

- 1 **M. E. Alam** and M. Gupta, "Enhancing Tensile Response of Sn Using Cu at Nano Length Scale and High Temperature Extrusion", S. Howard, P. Anyalebechi and L. Zhang (editors), *EPD Congress 2009, TMS*, February 15-19, 2009, San Francisco, California, USA, Pages 661-668.
- 2 **M. E. Alam**, S. M. L. Nai and M. Gupta, "Effect of Nano Size Copper Addition on the Tensile Properties of Tin", *Third International Conference on Processing Materials for Properties (PMP-III)*, December 7-10, 2008, Bangkok, Thailand.
- 3 **M. E. Alam** and M. Gupta, "Tensile Behavior of Tin Sintered Using Microwave and Radiant Heating", *International Conference on Mechanical Engineering (ICME' 07)*, December 29-31, 2007, Dhaka, Bangladesh, Pages AM 15-20.

- 4 M. Gupta, K. S. Tun and **M. E. Alam**, “Development of New Materials for Electronics And Weight Critical Industry Using Microwaves“, *The Fourth Asian Particle Technology Symposium (APT 2009)*, Sep. 14-16, 2009, New Delhi, India, (Presented).
- 5 S. Han, **M. E. Alam**, A. M. S. Hamouda, Q. B. Nguyen and M. Gupta, “Enhancing Mechanical Properties of AZ31 Magnesium Alloy Through Simultaneous Addition of Al and Nano- Al_2O_3 ” *ASME International Mechanical Engineering Congress and Exposition*, November 12-18, 2010, Vancouver, Canada.
- 6 **M. E. Alam**, S. Han, A. M. S. Hamouda, Q. B. Nguyen and M. Gupta, “Development and Characterization of New AZ41 and AZ51 Magnesium Alloys”, W. H. Sillekens, S. R. Agnew, N. R. Neelameggham and S. N. Mathaudhu (Editors), *Magnesium Technology 2011, TMS*, February 27 to March 3, 2011, San Diego, California, USA, Pages 553-558.
- 7 **M. E. Alam**, S. Han, Q. B. Nguyen, M. Gupta and A. M. S. Hamouda, “Improving Mechanical and Thermal Properties of AZ31 Alloy Through Simultaneous Addition of Aluminum and Nano- Al_2O_3 ”, *Qatar Foundation Annual Research Forum*, 12-13 December, 2010, Doha, Qatar, Forum Proceedings: Volume 2010, EEP33 (Poster, Got Runner up prize at QURF, Qatar University).
- 8 **M. E. Alam**, Q. B. Nguyen, S. Han, M. Gupta and A. M. S. Hamouda, “Effect of Aluminum Addition on the Microhardness and Tensile Strength of AZ31- Al_2O_3 Nanocomposite”, *International Conference on Materials for Advanced Technologies (ICMAT'2011)*, 26 June 1 July, 2011, Singapore.
- 9 **M. E. Alam**, Q. B. Nguyen, S. Han, A. M. S. Hamouda and M. Gupta, “Development of High Performance and Light Weight Magnesium based Nanocomposites”, *IJUM Engineering Congress (IEC'11)*, 17-19 May, 2011, Malaysia (Keynote Speaker: A. M. S. Hamouda).
- 10 **M. E. Alam**, A. M. S. Hamouda, S. Han, Q. B. Nguyen and M. Gupta, “Development of New AZ51 Magnesium alloy and its Al_2O_3 Nanocomposite”, *International Conference on Advances in Materials & Processing Technologies (AMPT' 11)*, 13-16 July, 2011, Istanbul, Turkey.
- 11 **M. E. Alam**, M. Gupta and A. M. S. Hamouda, “Development of New Magnesium Based AZ41/ Al_2O_3 -Ca Nanocomposites,” *Qatar University Research Forum*, 31 October' 2011 QU, Doha, Qatar (**Winner of the Best Poster Award**).
- 12 **M. E. Alam**, R. A. Rima, Q. B. Nguyen, A. M. S. Hamouda, and M. Gupta, “Effect of Ca addition on the Microstructural and Mechanical Properties of AZ51/1.5 Al_2O_3 Magnesium Nanocomposite”, S. N. Mathaudhu, W. H. Sillekens, N. R. Neelameggham, and N. Hort (Editors), *Magnesium Technology 2012, TMS*, March 11-15, 2012, Orlando, Florida, USA, Pages 201-206.

- 13 **M. E. Alam**, R. A. Rima, A. M. S. Hamouda and M. Gupta, "Effect of Nano-Size Al₂O₃ and Elemental Ca Addition on the Microstructural and Mechanical Properties of AZ41 Magnesium Alloy," 2nd *Qatar Foundation Annual Research Forum*, 20-22 November' 2011, Doha, Qatar, Forum Proceedings: Volume 2011, Page EVP13-215.
- 14 **M. E. Alam**, R. A. Rima, A. M. S. Hamouda and M. Gupta, "Microstructure and Mechanical Characteristics of AZ41/1.5Al₂O₃ Magnesium Based Nanocomposite with 2 wt.% Ca Addition", W. J. Poole and K. U. Kainer (Editors), *Mg 2012: 9th International Conference on Magnesium Alloys and Their Applications*, July 8-12' 2012, Vancouver, BC, Canada, Pages 929-934.
- 15 **M. E. Alam**, M. Gupta and A.M. S. Hamouda, "Development of New Lead-Free Sn-2.5Mg Solder for Electronic Packaging Industries", *Qatar Foundation Annual Research Forum*, October 21-23' 2012, QNCC, Doha, Qatar.

Keynote Speaker of Technical Seminars:

- 1 **M. E. Alam**, "Magnesium Nanocomposites: Advanced Engineering Materials", Keynote Speaker of a Technical Seminar Organised by the Institute of Engineers, Bangladesh-Qatar Chapter (IEB-Qatar Chapter), 27 May, 2011, Oryx Rotana Hotel, Doha, Qatar.

Professional Experience

1. Laboratory Officer: August 2009 to January 2010.
Mechanical Engineering Department, National University of Singapore, Singapore.
2. Post Doctoral Fellow: January 2010 to present
Mechanical and Industrial Engineering Department, Qatar University, Qatar.

Teaching Experience

1. Manufacturing Processes (Mech 230) at Qatar University, Qatar.
2. Guided quite a few undergraduate students in their 'final year project' at National University of Singapore, Singapore.

Achievements

I have published three peer reviewed international journal and 11 international conference papers in my two and half years post doctoral regime where I had to build up some laboratory facilities. Furthermore, I have submitted five more papers to high ranked journals and some are in pipelines. My posters were also won the best poster award given by QURF in 2010 and 2011.

References

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