



AKM Asif Iqbal

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Academic Qualification

PhD in Mechanical Engineering (2013)

Saitama University Japan

M.Sc in Manufacturing and Materials Engineering (2010)

International Islamic University Malaysia (IIUM)

B.Sc. in Mechanical Engineering (2001)

Rajshahi University of Engineering and Technology (RUET), Bangladesh

Research Interest/Theme

I have been working in the field of solid mechanics and on the boundary between solid mechanics and solid state ionics. Solid mechanics is a study on the mechanical behaviour of solid materials, whilst solid state ionics is a study on the ionic behaviour of solid materials. I have been investigating both behaviours and the interaction between them in order to contribute to a safe and sustainable society from a mechanical standpoint.

My current research interests focus mainly on the mechanical characterization, deformation, fatigue and fracture of structural material (Metal matrix composite, MMC) and the materials for energy and environment (oxygen-ion conducting ceramics for high-temperature use). The typical application examples of the MMCs are brake disc of the automobile and high-speed railway and the application example of oxygen-ion conducting ceramics is solid oxide fuel cell (SOFC). I have been investigating different mechanical properties and the factors affecting the failure of the composites. I have also been investigating the relationship between mechanical properties and ionic conductivity of the ceramics.

Research Projects

1. Development of Al-SiC nano-composite for automotive brake disc application.
2. Study on mechanical and wear properties of Al/Al₂O₃/Gr hybrid composites fabricated using powder metallurgy.

Publications (Selected)

1. **Iqbal AA**, Arai Y. *Analysis of fatigue crack propagation behavior in SiC particulate Al₂O₃ whisker reinforced hybrid MMC*. Materials Science and Engineering, Vol. 114, pp. 1-10, (2016).
2. **Iqbal AA**, Chen S, Arai Y, Araki W. *Study on stress evolution in SiC particles during crack propagation in cast hybrid metal matrix composites using Raman spectroscopy*. Engineering Failure Analysis, Vol. 52, (2015), pp. 109-115.
3. **Iqbal AA**, Arai Y, Araki W. *Mechanism of crack growth during fatigue in cast hybrid metal matrix composite reinforced with SiC particles and Al₂O₃ whiskers*. Transactions of Nonferrous Metals Society of China, Vol. 24 (2014), pp. 1-13.
4. **Iqbal AA**, Arai Y, Araki W. *Effect of hybrid reinforcement on crack initiation and early propagation mechanism in cast metal matrix composites during low cycle fatigue*. Materials and Design, Vol. 45, (2013), pp. 241-52.
5. **Iqbal AA**, Arai Y, Araki W. *Effect of reinforcement clustering on crack initiation mechanism in a cast hybrid metal matrix composite during low cycle fatigue*. Open Journal of Composite Materials, Vol. 3 (2013), pp. 97-106.

Teaching/Working Experience

Currently, I am teaching the following courses:

BFF 1133: Mechanics of Materials

BFF 1113: Engineering Materials