

Dr. Bobby Kannan Mathan

Research Fellow



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Current Research: Biodegradable magnesium-based alloys for orthopaedic implant applications. Innovative use of hydroxyapatite ($\text{Ca}_{10}(\text{PO}_4)_6 (\text{OH})_2$) coating on magnesium alloys for this purpose.

Research Interests: Biomaterials, Hydroxyapatite Coating, Stress Corrosion Cracking, Hydrogen Embrittlement, Hydrogen Permeation, Polymer Coatings, Electrochemical Corrosion.

Selected Publications:

- M. Bobby Kannan, R.K. Singh Raman, In vitro degradation and mechanical integrity of calcium-containing magnesium alloys in modified-simulated body fluid, **Biomaterials**, 29, (2008), pp.2306-2314.
- M. Bobby Kannan, R.K. Singh Raman, Evaluation of stress corrosion cracking behavior of AZ91 alloy in modified-simulated body fluid for orthopedic implant application, **Scripta Materialia** doi:10.1016/j.scriptamat.2008.03.001.
- M. Bobby Kannan, D. Gomes, W. Dietzel, V. Abetz, Polyoxadiazole-based coating for corrosion protection of magnesium alloy, **Surface Coating and Technology** (2008), doi: 10.1016/j.surfcoat.2008.03.027.
- M. Bobby Kannan, W. Dietzel, C. Blawert, A. Atrens, L. Paul, Stress corrosion cracking of rare-earth-containing magnesium alloy ZE41, QE22, and Elektron 21 (EV31A) compared with AZ80, **Materials Science and Engineering A**, 480, (2008), pp.529-539.
- M. Bobby Kannan, W. Dietzel, R.K. Raman Singh, L. Paul, Hydrogen-induced cracking in magnesium alloy, **Scripta Materialia**, 57, (2007) pp.579-581.
- M. Bobby Kannan, W. Dietzel, C. Blawert, S. Riekehr, M. Kocak, Stress corrosion cracking behavior of Nd:YAG laser butt welded AZ31 Mg sheet, **Materials Science and Engineering A**, 444, 1-2 (2007), pp.220-226.
- M. Bobby Kannan, V.S. Raja, Influence of heat treatment and scandium addition on the electrochemical corrosion behavior of Al-Zn-Mg-Cu-Zr (7010) alloy, **Metallurgical and Materials Transactions A**, 38A, (2007), 2843-2852.
- M. Bobby Kannan, W. Dietzel, R. Zeng, R. Zettler, J.F. dos Santos, A study on the SCC susceptibility of friction stir welded AZ31 Mg sheet, **Materials Science and Engineering A**, 460-461, (2007), pp.243-250.
- M. Bobby Kannan, V.S. Raja, Role of coarse intermetallic particles on the stress corrosion cracking behavior of peak aged and over aged Al-Zn-Mg-Cu-Zr alloy during slow strain rate testing, **Journal of Materials Science**, 42,(2007), 5458-5464.
- M. Bobby Kannan, V.S. Raja, Evaluation of hydrogen embrittlement susceptibility of over aged 7010 Al alloy, **Journal of Materials Science**, 41, 17 (2006), pp.5495-5499.
- M. Bobby Kannan, V.S. Raja, A .K. Mukhopadhyay, P. Schmuki, Effect of 0.25 wt. % scandium on the environmentally assisted cracking behavior of 7010 aluminium alloy, **Metallurgical and Materials Transactions A**, 36, 11(2005), pp.3257-3262.
- M. Bobby Kannan, V.S. Raja, A .K. Mukhopadhyay, Determination of true stress corrosion cracking index of a high strength Al alloy using glycerin as the non-corrosive atmosphere, **Scripta Materialia**, 51,11(2004), pp.1075-1079.
- M. Bobby-Kannan, V.S. Raja, R. Raman, A .K. Mukhopadhyay, Influence of multistep aging on the stress corrosion cracking behavior of Al alloy (7010), **Corrosion**, 59, (2003), pp.881-889.