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(51) International classification :C22C0001100000, C22C0032000000, G01N0003420000, C22C0001040000, B22D0019140000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Mr. Prashant Kumar Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 2)Dr. Vaibhav Trivedi 3)Mr. Arvind Chaudhary 4)Mr MOHAMMAD JAVED 5)Mr. Prashant Gupta 6)Mr. Lalit Pathak 7)Mr. Ankit Chauhan 8)Mr.Mayank Bhardvaj 9)Ms. Bhavana Singh 10)Mr. Ayush Saxena Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Mr. Prashant Kumar Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 2)Dr. Vaibhav Trivedi Address of Applicant :Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 3)Mr. Arvind Chaudhary Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 4)Mr MOHAMMAD JAVED Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 5)Mr. Prashant Gupta Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 6)Mr. Lalit Pathak Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 7)Mr. Ankit Chauhan Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 8)Mr.Mayank Bhardvaj Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 9)Ms. Bhavana Singh Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- ----- 10)Mr. Ayush Saxena Address of Applicant :Assistant Professor, Mechanical Engineering, IFTM University, NH-9, Lodhipur Rajput, Delhi Road, Moradabad, Uttar Pradesh, Pin Code: 244001 ----- -----
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(57) Abstract :

The present invention relates to a method for fabricating aluminium metal matrix composites (MMCs) reinforced with Sagoon wood fly ash using the stir casting technique. Al 6063 alloy is used as the base matrix due to its lightweight and favorable mechanical properties. The fly ash, preheated at 60°C, is added in varying proportions (8 wt%, 12 wt%, and 16 wt%) and uniformly dispersed in the molten alloy through mechanical stirring to form a homogenous composite. The mixture is then cast into preheated moulds and allowed to solidify under ambient conditions. Mechanical testing reveals a notable enhancement in properties: the composite with 12 wt% fly ash shows a 14% increase in tensile strength, a 17% rise in impact strength, and a 12% improvement in Brinell hardness compared to the unreinforced alloy. Microstructural analysis confirms uniform distribution of fly ash and good interfacial bonding, making the composite suitable for structural and automotive applications.

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