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**Dry Sliding-Friction and Wear Behavior of Hot-Extruded Al6061 / Si3N4/ Cf Hybrid Metal Matrix Composite**

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**Abstract**

The effects of reinforcement addition and hot extrusion on the microstructures, micro hardness, friction, and wear behavior of aluminum (Al) hybrid composite were investigated. Al6061 dispersed with electroless nickel-coated Si3N4 (6 wt.%) and copper-coated carbon fiber (Cf) (1 wt.%) hybrid composites was developed through stir casting followed by hot extrusion. Optical micro-structural studies confirmed that the size of reinforcements decreased, and their orientations were in the extrusion direction. The decrease in the grain size (29%) of hybrid composites was larger than that in the grain size of matrix alloys under hot-extruded conditions. The synthesized hot-extruded Al6061 hybrid composite exhibited a lower coefficient of friction (51%) and high wear resistance (39%) compared with the hot-extruded Al6061 base alloy.

**Keywords:**

Carbon fibers, Coefficient of friction (COF), Hot extrusion, Hybrid composite, Si3N4, Wear rates

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