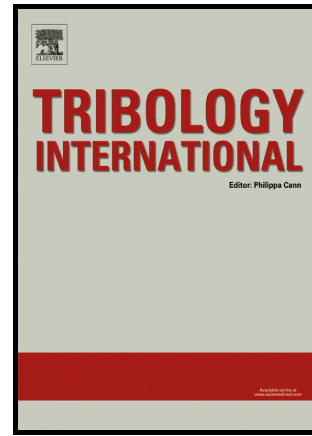


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# Tribological behaviors of epoxy composites under water lubrication conditions

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## Abstract

The aim of this work is to investigate the tribological behaviors of epoxy composites under water lubrication conditions at both varying and constant sliding speeds. In particular, the roles of reinforcing fillers, i.e. carbon and glass fibers, solid lubricants and SiO<sub>2</sub> nanoparticles, on the friction and wear properties of EP were investigated. It is demonstrated that both the reinforcing fibers significantly enhance the wear resistance of EP. Under mixed and boundary lubrication conditions, the addition of SiO<sub>2</sub> nanoparticles into EP conventional composite filled with carbon fibers and graphite reduces the friction and wear. It is revealed that the tribological performance of the fibers-reinforced EP composites is mainly attributed to the high abrasion resistance of the fibers and the tribofilm formation.

## Keywords

Epoxy composites; Tribology; Water lubrication; Tribofilm

## 1. Introduction

High-performance polymer composites are increasingly used in sliding components such as bushings and journal bearings owing to their superior self-lubricating capability, mechanical properties and chemical resistance [1-4]. In the last decades, the tribology of

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