

Knowledge of wear resistance properties of newly emerging materials as complements to their mechanical properties is important to broaden their applications. This study focuses on wear resistance properties of particle-reinforced epoxy. Results obtained reveal that surface wear of the examined epoxy-based composites occurred by the crack initiation by the abrasive tips of the wear tester, crack propagation and/ or crack pinning. Linear regression model has accuracies of 99.94, 99.92, 99.93, 99.88, 99.91 and 99.92% with respect to various grades of composites examined. Response surface two-functional interaction model exhibits a better goodness of fit than the response surface linear model that shows an outlier. The response surface linear model best fits the wear rates of AlnpUCSnp/epoxy and AlnpCCSnp/epoxy with respective adequate precision of 14.138 and 10.204 affirming the model's adequate signal. Hence, this study establishes that epoxy-based hybrid composite having 4.7%–82.47 nm-sized aluminium-5.76%–49.85 nm-sized carbonised coconut shell hybrid particles experiences a surface wear of 0.00272721 g per metre when it is in contact with a rough surface under an applied load of 16.71 N at a speed of 0.7 ms⁻¹.