

22<sup>nd</sup> International Conference on

## ADVANCED MATERIALS AND NANOTECHNOLOGY

September 19-21, 2018 Tokyo, Japan

**Thin film coating of CFRP for improved surface property****Yusuke Hayashi and Petros Abraha**  
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The frictional heat and wear volume of Carbon Fiber Reinforced Plastics (CFRP) is evaluated with regards to usage as a material for sliding/rolling mechanical parts. CFRP is a carbon fiber reinforced polymer matrix with high strength-to-weight ratio that is commonly used as material for structural components. However, usage as a material for sliding/rolling mechanical parts has been limited due to friction and wear behavior which is significantly affected by interface temperatures. Frictional heating can cause surface temperatures to reach the melting or softening temperature of polymers, and this results in a drastic change in the friction and wear behavior of the surface. In this research, the CFRP surface is coated with a Diamond-Like-Carbon (DLC) thin film, a hard material with a low friction coefficient, to protect the polymer matrix from the excessive frictional heat and to reduce the wear volume. The coated surfaces are then tested with a reciprocating sliding friction tester and ring on disc friction tester to determine friction coefficient and wear volume and frictional heat, respectively. The results show that the DLC thin film protected the carbon fibers and thus reduced the friction coefficient and the frictional heat. Moreover, the increased surface hardness produced lower wear volume opening the way for application of CFRP material for use in sliding mechanical parts.

**Biography**

Yusuke Hayashi has completed his Bachelor's degree from Meijo University and currently pursuing his Master's degree course.

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