Wear behavior of electroconductive graphene/alumina composite

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Abstract
In the last few years, graphene has emerged as a promising reinforcement material to improve wear resistance in composite materials. Although there are many research articles in the graphene/polymer composite field, there are only a few examples in the literature where the tribological properties of graphene/ceramic composites have been analysed (1,2).

The present work has studied, for the first time, to the best of our knowledge, the dry sliding behaviour of an alumina/graphene composite (3) against alumina in air. Under the adopted testing conditions, the reduction in the wear rate of almost twice the alumina value was observed once the graphene platelets were added to the monolithic material. Additionally, it was appreciated a reduction of the friction coefficient of about 10% that was attributed to the presence of the graphene platelets and the role that they play in the tribological system. These adhered platelets act as a self-lubricating layer when fixed to the contact surface between the composite and the alumina ball, during the experiment, that acts as counterpart material

References