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## Research on nickel modified graphite/Cu composites interface

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**Abstract:** Graphite/Cu composites are used as switch slide baseplate materials. However, their mechanical properties would decline with an increase in graphite content. In this study, the interface of nickel coated graphite/Cu composites was modified by depositing electroless plated nickel coatings on the surface of graphite. The interfacial characterizations were researched and modification mechanism of nickel coating in the composites was also analyzed. Finally, mechanical properties of nickel coated graphite/Cu composites with different graphite contents were tested. The results showed that the width of the nickel coating deposited on the surface of graphite was about 1.31  $\mu\text{m}$  and the nickel coating which was made of spherical nano particles exhibited densification with little distinct pores. The mutual diffusion generating at the interface was about 2.419  $\mu\text{m}$  in the composites. The interface transferred from mechanical bonding to metallurgy bonding. Nickel coating could not only decline diffusion activation energy but also increase diffusion driving force. Compared with the composites with no coating on graphite, improvement of flexural strength raised 35.5% while the relative density enhanced 1.8% and hardness increased 14.2%.

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