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### Si-B-N Ternary Films on Mg-Li Alloys

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Mg-Li alloys have attracted lots of attention due to their superior properties such as the ultra-light density, high specific strength, good formability and excellent electromagnetic shielding performance. However, these alloys have even poorer oxidation and corrosion resistance, which limit the widely applications of Mg-Li alloys. We propose a novel ceramic film (Si-B-N) deposited to the surface of Mg-8.8 wt.% Li alloys through plasma enhanced chemical vapor deposition (PECVD) method using SiH<sub>4</sub>-B<sub>2</sub>H<sub>6</sub>-N<sub>2</sub> gas mixture, as a barrier to prevent the Mg-Li alloys from oxidation and corrosion. The films show compact structures and adhesive attachment to the surface of alloys due to the atomic deposition and chemical reaction, largely improving the oxidation and corrosion resistance of the specimens. Besides, the films exhibit excellent wear resistance. The dependence of film properties on film compositions and structures have also been investigate.

#### References

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Figure 1. The surface morphology of specimens. (a) Polished specimen; (b) Coated specimen; (c) The infrared absorbance spectrum of the Si-B-N films at several fractions of B<sub>2</sub>H<sub>6</sub> with a deposition time of 5 h. (d), (e), (f), (g) & (h) The surface morphology of specimens with fractions of B<sub>2</sub>H<sub>6</sub> being 1/4, 1/3, 1/2, 2/3 & 3/4, respectively.

