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**Preparation and properties of Poly-(p)-oxybenzoyl/aluminum bronze composite coating  
by atmosphere plasma spraying**

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**Abstract**

Poly-(p)-oxybenzoyl/aluminum bronze (denoted as POB/CuAl) composite coating was deposited as a candidate of lead-free bearing surface on steel substrate by plasma spraying. The composition, microstructure, and chemical feature of the sprayed POB/CuAl composite coating were analyzed by scanning electron microscopy, energy dispersive spectrometry, and Raman spectroscopy. And the friction and wear behavior of POB/CuAl composite coating was evaluated and compared with that of pure aluminum bronze coating and AISI-E52100 bearing steel on a ball-on-disc reciprocal tribometer. It was found that plasma sprayed POB/CuAl composite coating possesses low and stable friction coefficient in combination with greatly reduced wear rate as compared with pure CuAl coating and AISI-E52100 bearing steel. More importantly, the POB/CuAl composite coating causes minimum damage to its frictional counterpart, which is significant for its application as a lead-free bearing surface. This is

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