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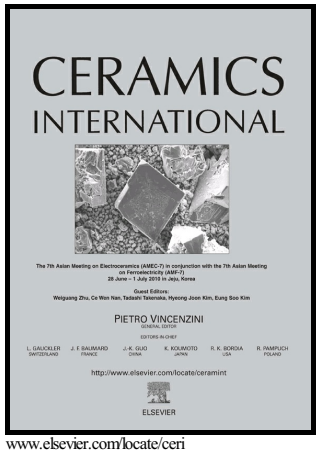

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Abstract:

The carbon fiber reinforced/carbon-boron nitride (C/C-BN) dual matrix composites were fabricated via adding hexagonal boron nitride (h-BN) powders into the needled carbon felt and subsequent chemical vapor infiltration (CVI) process. An experimental investigation was performed to study the influences of BN volume content on the microstructures and tribological properties of C/C-BN composites. The results indicate that the pyrolytic carbon (PyC) in the C/C-BN composites is regenerative laminar (ReL) due to the inducement of BN powders during CVI process, whereas the PyC in the C/C composite is classic smooth laminar. Additionally, the friction coefficients of C/C-BN composites with three different BN contents in volume fractions (4.5, 9 and 13.5 vol.%) are all higher compared to the reference C/C composite (0.22). Note that the highest coefficient of friction (0.29) is obtained when the BN volume content in the C/C-BN composite is 9 vol.%. Moreover, the linear and mass wear rates of C/C-BN composites as well as the