Accepted Manuscript

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PII: S0266-3538(18)30725-5

DOI: 10.1016/j.compscitech.2018.08.026

Reference: CSTE 7359

To appear in: *Composites Science and Technology*

Received Date: 28 March 2018

Revised Date: 14 July 2018

Accepted Date: 18 August 2018

Please cite this article as: Zhao ZJ, Xian GJ, Yu JG, Wang J, Tong JF, Wei JH, Wang CC, Moreira P, Yi XS, Development of electrically conductive structural BMI based CFRPs for lightning strike protection, *Composites Science and Technology* (2018), doi: 10.1016/j.compscitech.2018.08.026.

Development of Electrically Conductive Structural BMI Based CFRPs for Lightning Strike Protection

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Abstract: In the present paper, bismaleimide resin (BMI) based carbon fiber reinforced composite (CFRP) with remarkable lightning strike protection (LSP) capability was developed. A light weight conductive veil was prepared and interleaved to CFRP with the through thickness conductivity of 27.9S/m, while its static mechanical strength was unaffected. We prove that the through thickness conductive pathways made CFRP to disperse the lightning current more effectively; reducing the lightning damage toward the inner part of the CFRP. The deepening Joule heat was proved to be the major reason of the penetrating structure failure. Comparing to the state-of-art metal sacrifice layer for LSP, the through thickness conductive CFRP has lighter weight and similar LSP capability, without compromising the mechanical strength.