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## **Radar-absorbing structure with nickel-coated glass fabric and its application to a wing airfoil model**

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### **ABSTRACT**

In this study, a thin lightweight single- and double-slab with a nickel-coated glass-fabric design manufactured via the mass production electroless plating method is proposed for an enhanced echo radar cross section (RCS) for curved surfaces. The main objective of this research is to reduce the echo RCS from the C- band to the Ku-band (in GHz) for a wing airfoil model (NACA0012) radar-absorbing structure. For conventional microwave absorption performance, a high weight percentage of nano-conductive particles within a polymer matrix is crucial. However, certain difficulties are encountered in terms of high viscosity and thickness control in the polymer matrix for its application to the curved surface of the wing airfoil model. The proposed RCS absorber models reduce these difficulties associated with conventional RCS models. When the proposed absorbers are applied to the wing structures to cover the entire surface, the simulated results of the echo RCS level capacity demonstrate a 10-dB reduction from the C-Band to Ku-band for a wide-angle oblique incidence in both the horizontal and vertical polarizations. From a practical standpoint, these results show that nickel-coated-glass-fabric/epoxy composites have a tremendous potential for application to the

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