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Dielectric properties of carbon-unvowen fabric composite obtained by plasma assisted physical vapour deposition.

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Fabric materials with thin carbon layer can be used as shield for protection of people or electronic and electric power devices against of disadvantageous impact of electromagnetic fields. Deposition of thin plasma layer on the rough fabric surface should also increase the active surface of the shield, which strongly influences the effectiveness of reflection at interfacial layers. The surface reflecting the wave must be electrically conductive, however, high conductivity is not required. It means, that in the case of composite material containing conductive layer, conductive connection of the layer units is not necessary, although such connection reinforces screening. Efficiency of reflection at the interfacial surfaces depends, among the others, on the surface area. In the case of fabric such developed surface can be made of surfaces of fibers with plasma carbon layer.
In the process of putting thin carbon layer coatings onto the fabric the method of low temperature glow discharges plasma - PAPVD (Plasma Assisted Physical Vapour Deposition) was used. Obtained layers exhibited good adhesion to the substrate.
In the paper, we report on dielectric properties of carbon-polypropylene fabric composite. The dielectric parameters vary depending on the morphology of substrate surface and on parameters of the plasma generating process. Measurements of the complex admittance of the composites were performed in the frequency range between 100 Hz and 1 MHz.
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