
USE OF CARBON MATERIALS IN ELECTROMAGNETIC INTERFERENCE SHIELDING

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Abstract

The article examines application of carbon materials for electromagnetic interference shielding. It is proved that the use of electrodeposited with nickel carbon fibers of submicron diameter in composite materials, allows us to obtain high shielding effectiveness. The paper describes a mechanism for protecting against electromagnetic fields, which includes the reflection and / or absorption of electromagnetic radiation, and moreover, gives the classification of electromagnetic materials. The work also offers a method for producing thermally expanded graphite, which is used for manufacturing elastic spacers and which possesses shielding properties

Keywords

Electromagnetic radiation, skin effect, carbon fibers, thermally expanded graphite, shielding effectiveness

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References

- [1] Khandogina E.N., Vladimirov D.N. Electromagnetic waves shielding — basis of environmental safety and effective protection from industrial spying. *Konfident*, 1999, no. 6, pp. 68–72. (in Russ.).
 - [2] Kamyshnaya E.N., Markelov V.V., Solov'yev V.A. *Konstruktorsko-tehnologicheskie raschety elektronnoy apparatury* [Design-engineering calculations of electronic equipment]. Moscow, Bauman MSTU Publ., 2014. 165 p. (in Russ.).
 - [3] Kamyshnaya E.N., Parfenov E.M., Sherstnev V.V. *Programmnoe obespechenie konstruktorskikh raschetov REA i EVA. T. 1* [Engineering design software of EVA and REVA engineering design. Vol. 1]. Moscow, Bauman MSTU Publ., 1988. 34 p. (in Russ.).
 - [4] Barat V.A., Vlasov A.I., Gomonov D.A., Podobedov D.V. [Using FEM and BEM approach for grid modelling of «medium-structure» like objects]. *Naukoemkie tekhnologii i intellektual'nye sistemy v XXI veke. Sbornik nauchnykh trudov molodezhnoy nauchno-tehnicheskoy konferentsii* [Knowledge intensive technologies and intelligent systems in XXI. Proc. Youth sci.-tech. conf.]. 2000. Pp. 145–159. (in Russ.).
 - [5] Belov B.I., Sherstnev V.V., Markelov V.V., S'edugin V.V., Chekanov A.N. *Ekranirovanie i mezhsoedineniya v EVA i REA. Raschety nadezhnosti EVA i REA* [Shielding and interconnections in EVA and REA. Calculations of reliability of EVA and REA]. Moscow, Bauman MSTU Publ., 1980. 40 p. (in Russ.).
 - [6] Vlasov A.I., Volodin E.A., Sementsov S.G., Shakhnov V.A. Electronic systems of active management of wave fields: history and tendencies of development. *Uspekhi sovremennoy radioelektroniki* [Achievements of Modern Radioelectronics], 2002, no. 4, pp. 3–23 (in Russ.).
 - [7] Lyn'kov L.M., Bogush V.A., Borbot'ko T.V., Ukrainets E.A., Kolbun N.V. New materials for EMI screens. *Doklady BGUIR*, 2004, no. 3, pp. 152–167 (in Russ.).
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- [8] Sadchikov V.V., Prudnikova Z.G. Amorphous materials in electromagnetic shields. *Stal'*, 1997, no. 4, pp. 66–69 (in Russ.).
- [9] Eremenko A.S. [Research on carbon fibers and carbon nanotubes]. *Sbornik trudov dvenadtsatoy nauchnoy konferentsii molodykh issledovateley "Shag v budushchee"* [Proc. 10th sci. conf. of young researchers "Step into the future"]. Moscow, Bauman MSTU, 2009, no. 2. URL: <http://www.myshared.ru/slide/183345/> (accessed 01.12.2016) (in Russ.).
- [10] Fialkov A.S. Uglerod, mezhsloevye soedineniya i kompozity na ego osnove [Carbon, interlaminar bondings and composites on its base]. Moscow, Aspekt-Press Publ., 1997. 718 p. (in Russ.).

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