

AN OVERVIEW ON INNOVATIVE COMPOSITE MATERIALS EMPLOYED IN THE CONSTRUCTION OF MICROSATELLITES

Emilia BĂLAN¹, Tudor ALEXANDRU², Andra Elena PENA³

Rezumat. *Industria spațială cunoaște un interes sporit pentru misiunile cu microsateliți, aceștia fiind utilizați frecvent în apărare, agricultură, business intelligence, în caz de dezastre, în comunicații. În lucrare sunt prezentate date recente din literatura de specialitate despre structura și proprietățile materialelor compozite în vederea stabilirii posibilităților de utilizare a acestora în construcția microsateliților, în contextul unei dezvoltări durabile. Materialele compozite inovative trebuie să prezinte stabilitate dimensională în timpul expunerii la ciclurile termice din spațiu, grad de degazare redus, rezistență ridicată la microfisurare, radiații UV, oxigen atomic, iradiere cu protoni și la resturi orbitale.*

Abstract. *The space industry has a growing interest in microsatellite missions, which are frequently employed in the defense, agriculture, business intelligence, in case of disasters, in communications. The paper presents recent findings from the literature regarding the structure and properties of composite materials, in order to establish the possibilities of their use in the development of microsatellites, in the context of a sustainable development. Innovative composites must have dimensional stability during exposure to thermal cycling in space, low degree of outgassing, high resistance to microcracking, UV radiation, atomic oxygen, proton irradiation and orbital debris.*

Keywords: microsatellites, composite materials, structure, properties polymer matrices, properties reinforcing fillers

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1. Introduction

Aviation and airspace represent growing strategic areas that are based on the cooperation between public and private industries, with governments funding various civilian space programs with the help of national space agencies (eg NASA in the US, ESA for various European countries).

¹Assoc. Prof., PhD Eng., Faculty of Industrial Engineering and Robotics, Robots and Production Systems Department, University POLITEHNICA of Bucharest, Romania, (e-mail: emilia.balan59@yahoo.com).

²Assistant Prof., PhD Eng., Faculty of Industrial Engineering and Robotics, Robots and Production Systems Department, University POLITEHNICA of Bucharest, Romania, (e-mail: alexandru_tudor_imst@yahoo.com).

³Lecturer, PhD Eng., Faculty of Industrial Engineering and Robotics, Robots and Production Systems Department, University POLITEHNICA of Bucharest, Romania, (e-mail: andra.pena@yahoo.com).
