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Author: Mr. Ricardo Vazquez-Robledo
School of Engineering, National Autonomous University of Mexico, Mexico,
rvrobledo@comunidad.unam.mx

Dr. Saul De la Rosa Nieves
School of Engineering, National Autonomous University of Mexico, Mexico, saulrn7@yahoo.com.mx

MODEL OF ADHESIVE PERFORMANCE FOR SPACE APPLICATIONS.

Abstract

In the present paper, we expose a new model for the study of adhesives performance for space conditions. The proposed hypothesis considers outgassing and absorption of humidity parameters that affect adhesives on extreme environmental conditions. The model is based on the work of Volkersen, Chen and Nelson that considers the maximum stress induced in bonded materials by thermal differential expansion and contraction in two different materials. The use of this estimation model can permit to predict the adhesive behavior used for applications on high precision space instruments, like optics. Also this model is valid for applications that require bonded parts of heterogeneous materials joined in the different subsystems of the satellite.