

Method for checking the quality of a composite structure comprising a thin film made of c-SiC, and composite structure

ABSTRACT

The invention relates to a method for checking the quality of a composite structure comprising a thin film made of single-crystal silicon carbide disposed on a carrier substrate made of polycrystalline silicon carbide, the method comprising:

- a)** inspecting a free surface (10a) of the thin film (10) using a technique combining confocal visible light microscopy and photoluminescence imaging, allowing defects, called secondary defects, to be detected;
- b)** initially identifying secondary defects, by similarity, based on their visible light image, by virtue of an image recognition algorithm trained on various types of defects, such as voids, bubbles, scratches, defects of crystalline origin; with, on completion of step b), each secondary defect being associated with an identified type of defect, with a certain level of similarity;
- c)** finally classifying at least some secondary defects by applying the following first conditions:
 - if the level of similarity associated with a secondary defect is greater than a high level, said secondary defect is definitively classified as the identified type of defect;
 - if the level of similarity associated with the secondary defect ranges between a low level and the high level, the photoluminescence image of said defect is analysed; if the secondary defect is associated with a tagged type of PL defect, said secondary defect is definitively classified as the identified type of defect;
 - in other cases, the secondary defect is definitively classified as not being a defect.

Fig. No figure