

Lightweight structural materials in open access: latest trends

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Abstract-

The aeronautical and automotive industries have, as an essential objective, the energy efficiency optimization of aircraft and cars, while maintaining stringent functional requirements. One working line focuses on the use of lightweight structural materials to replace conventional materials. For this reason, it is considered enlightening to carry out an analysis of the literature published over the last 20 years through Open Access literature. For this purpose, a systematic methodology is applied to minimize the possible risks of bias in literature selection and analysis. Web of Science is used as a search engine. The final selection comprises the 30 articles with the highest average numbers of citations per year published from 2015 to 2020 and the 7 articles published from the period of 2000–2014. Overall, the selection is composed of 37 Open Access articles with 2482 total citations and an average of 67.1 citations per article/year published, and includes Q1 (62%) and Q2 (8%) articles and proceeding papers (30%). The study seeks to inform about the current trends in materials and processes in lightweight structural materials for aeronautical and automotive applications with a sustainable perspective. All the information collected is summarized in tables to facilitate searches and interpretation by interested researchers.

Index Terms- lightweight; multi-material; polymer; aerospace; automotive; sustainable

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