

EDITORIAL

Materials and manufacturing engineering: A bibliometric analysis

J. Paulo Davim^{1,*}

¹ University of Aveiro, Department of Mechanical Engineering Campus Santiago, 3810-193, Aveiro, Portugal

Abstract

Materials and manufacturing engineering is an interdisciplinary area dedicated to applying materials and production technologies for the most varied sectors, including the automotive, aeronautical, aerospace, and biomedical industries. The Scopus database was used for the bibliometric analysis, based on the terms materials AND manufacturing. The better result shows in the function of the number of documents produced: year 2023; source Proceedings of SPIE; author Berto, F.; affiliation Ministry of Education of China; country USA; document type article; scientific area engineering and funding support National Natural Science Foundation of China.

Keywords: materials, manufacturing, manufacturing processes, production

Citation

J. Paulo Davim (2024). Materials and manufacturing engineering: A bibliometric analysis. *Mari Papel Y Corrugado*, 2024(1), 57–58.

© The authors. <https://creativecommons.org/licenses/by/4.0/>.

1 Introduction

Materials science integrates elements of physics, chemistry, and engineering. Manufacturing is the “art” of transformation of materials into products. Unlike conventional subtractive manufacturing, additive

manufacturing, uses layer-by-layer fabrication based on a raw material, usually powder or wire, which is melted by a heat source and solidified to obtain the final geometry. Manufacturing engineering, also known as production engineering, involves concepts common to other branches of engineering, such as mechanical, electrical, chemical and industrial engineering [1–4].

The bibliometric analysis used the database Scopus/Elsevier to search for the documents. Using the terms materials AND manufacturing, TITLE-ABS-KEY ({materials} AND {manufacturing}), 167575 documents were identified (a search carried out on November 5th, 2024).

The results obtained in documents can be seen in Table 1, for the first ten positions concerning year, source, author, affiliation, country, document type, scientific area, and funding support. The better results obtained show in function of the number of documents produced: year 2023 (14126), followed by the years 2022 (13042) and 2021 (11924); source Proceedings of SPIE - International Society for Optical Engineering (3864) followed by Materials - MDPI (1684) and International Journal of Advanced Manufacturing Technology- Springer (1548); author Berto, F. - Sapienza Università di Roma (119), followed by Klocke, F. - Rheinisch-Westfälische Technische Hochschule Aachen (114) and Merklein, M. - Friedrich-Alexander-Universität Erlangen-Nürnberg (94); affiliation Ministry of Education of China (2239) followed by Chinese Academy of Sciences (1773) and CNRS Centre National de la Recherche Scientifique (1322); country USA (38109) followed by China (22306) and Germany (13544); document type Article (92782) followed by Conference Paper (49546) and Review (13070); scientific area Engineering (102823) followed by Materials Science (73980) and Physics and Astronomy (32344) and funding support National Natural Science Foundation of China (8754) followed by National Science Foundation (3871) and Ministry of Science and Technology of the People’s Republic of

Submitted: -

Accepted: -

Published: 16 November 2024

Vol. 2024, No. 1, 2024.

*Corresponding author:

✉ J. Paulo Davim

pdavim@ua.pt

Year	Source	Author	Affiliation
1 2023 (14126)	Proceedings of SPIE (3864)	Berto, F. (119)	Ministry of Education of China (2239)
2 2022 (13042)	Materials (1684)	Klocke, F. (114)	Chinese Academy of Sciences (1773)
3 2021 (11924)	Int. J. Adv. Manuf. Techno (1548)	Merklein, M. (94)	CNRS Centre National de la Rech. Scientifique (1322)
4 2020 (10828)	Materials Today Proceedings (1380)	Akinlabi, E.T. (92)	Georgia Institute of Technology (912)
5 2019 (9346)	SAE Technical Papers (1165)	Uhlmann, E. (91)	Rheinisch-Westfälische Tech Hochschule Aachen (859)
6 2018 (7964)	IOP Conference Series Mat. Sc. and Eng. (1163)	Shamsaei, N. (85)	Tsinghua University (846)
7 2017 (6948)	Additive Manufacturing (1150)	Franke, J. (84)	Massachusetts Institute of Technology (823)
8 2016 (6012)	AIP Conference Proceedings (1149)	Zadpoor, A.A. (81)	Nanyang Technological University (778)
9 2014 (5142)	Advanced Materials Research (1135)	Bergs, T. (80)	Purdue University (767)
10 2015 (5008)	Lecture Notes In Mechanical Engineering (1029)	Davim, J.P. (80)	Harbin Institute of Technology (728)
Country	Type	Area	Funding Support
1 USA (38109)	Article (92782)	Engineering (102823)	National Natural Sci, Found. of China (8754)
2 China (22306)	Conference Paper (49546)	Materials Sc (73980)	Nacional Science Foundation (3871)
3 Germany (13544)	Review (13070)	Physics and Astr. (32344)	Ministry of Education of China (2781)
4 India (12013)	Book Chapter (7016)	Computer Sc. (20733)	European Comission (2746)
5 UK (9650)	Conference Review (1997)	Chemistry (16393)	U.S. Department of Energy (2065)
6 Italy (6586)	Book (1346)	Chemical Eng. (14623)	National Key Res. and Dev. Program of China (2050)
7 Japan. (5579)	Short Survey (634)	Environmental Sci. (11151)	Engineering and Physical Sc Res. Council (1659)
8 France (5164)	Note (548)	Energy (10983)	D. Forschungsgemeinschaft (1653)
9 Russian Fed (4725)	Editorial (257)	Mathematics (10582)	Horizon 2020 Framework Programme (1530)
10 South Korea (4677)	Report (90)	Business, M. Acc. (6989)	Fundamental Res. Funds for the Central Univ. (1360)

Table 1. Documents (167575) by (source Scopus/Elsevier, November 5th, 2024)

China (2781).

References

[1] Blakey-Milner, B., Gradl, P., Snedden, G., Brooks, M., Pitot, J., Lopez, E., ... & Du Plessis, A. (2021). Metal additive manufacturing in aerospace: A review. *Materials & Design*, 209, 110008.

[2] Davim, J.P. (ed.) (2015). *Modern Manufacturing Engineering*, Springer, <https://link.springer.com/book/10.1007/978-3-319-20152-8>

[3] Davim, J.P. (ed.) (2018). *Manufacturing Engineering Education*, Elsevier, <https://www.sciencedirect.com/book/9780081012475/manufacturing-engineering-education>

[4] Davim, J.P. (ed.) (2020). *Additive and Subtractive Manufacturing: Emergent Technologies*. Berlin, Boston: De Gruyter. <https://doi.org/10.1515/9783110549775>