

The Global Market for Metal-Organic Frameworks (MOFs) 2024-2035

<https://marketpublishers.com/r/G1E9D7521804EN.html>

Date: March 2024

Pages: 118

Price: US\$ 1,250.00 (Single User License)

ID: G1E9D7521804EN

Abstracts

Metal-organic frameworks, or MOFs, are highly crystalline, porous materials with nanometre-sized pores and large internal surface areas. Their structures make them useful for applications such as carbon capture, adsorption of greenhouse gas methane, and dehumidification of air for room climate control. MOFs exhibit unique physicochemical properties, including high surface area, ultra-high porosity, low crystal density as well as remarkable thermal and chemical stabilities.

The Global Market for Metal-Organic Frameworks (MOFs) 2024-2035 provides a comprehensive analysis of metal-organic frameworks (MOFs), an emerging class of highly porous materials with molecules designed to enable customized properties across diverse applications from gas storage and separation to water harvesting, biomedicine, sensors, energy storage and more. The report analyzes key synthesis methods, structure and properties of MOFs in comparison to other porous materials like zeolites and covalent organic frameworks (COFs). An assessment of global market revenues and demand forecasts from 2018-2035 is provided, segmented by end-use sector and region. Granular ten-year projections provide market outlooks for MOF adoption in carbon capture, hydrogen storage, catalysis, biomedicine, batteries and across 15 other key industries where these advanced materials promise performance advantages and sustainability benefits.

Additionally, the report profiles 35+ leading companies commercializing MOF technologies including innovative startups and major corporations. Competencies and partnerships span R&D around novel MOF production techniques, commercialization of formulations targeting gas separation/storage, drug delivery, water harvesting and next-generation solutions for carbon dioxide removal and heat exchangers. Companies profiled include Atomis, BASF, Disruptive Materials AB, H2MOF, novoMOF AG, Nuada,

NuMat Technologies, Inc., and ProfMOF.

Contents

1 INTRODUCTION

- 1.1 Structure and properties
- 1.2 Comparison to other porous materials
 - 1.2.1 Zeolites
 - 1.2.2 Covalent Organic Frameworks (COFs)
 - 1.2.3 Porous Organic Polymers (POPs)
- 1.3 Synthesis methods
 - 1.3.1 Solvothermal synthesis
 - 1.3.2 Electrochemical synthesis
 - 1.3.3 Microwave synthesis
 - 1.3.4 Diffusion synthesis
 - 1.3.5 Mechanochemical synthesis
 - 1.3.6 Sonochemical synthesis
 - 1.3.7 Room Temperature synthesis
 - 1.3.8 Spray Pyrolysis
 - 1.3.9 Ionothermal synthesis
 - 1.3.10 Layer-by-layer growth technique
 - 1.3.11 High-throughput robotic methods
- 1.4 Markets and applications
- 1.5 Industry developments 2021-2024

2 MARKETS FOR METAL-ORGANIC FRAMEWORKS

- 2.1 Factors driving demand for MOFs
- 2.2 Market map
- 2.3 Value chain
- 2.4 Commercial MOF products
- 2.5 SWOT analysis
- 2.6 Capture, Separation and Storage
 - 2.6.1 Gas separation
 - 2.6.2 Hydrogen capture and storage
 - 2.6.3 Carbon capture and storage
 - 2.6.3.1 DAC solid sorbents
- 2.7 Catalysis
 - 2.7.1 Properties
 - 2.7.2 Applications

- 2.8 Coatings
 - 2.8.1 Properties
 - 2.8.2 Applications
- 2.9 Biomedicine
 - 2.9.1 Properties
 - 2.9.2 Applications
 - 2.9.2.1 Drug delivery
 - 2.9.2.2 Antibacterials
 - 2.9.2.3 Biosensors and bioimaging
- 2.10 Sensors
 - 2.10.1 Properties
 - 2.10.2 Applications
- 2.11 Air and water filtration
 - 2.11.1 Properties
 - 2.11.2 Applications
- 2.12 Water harvesting
 - 2.12.1 Properties
 - 2.12.2 Applications
- 2.13 Batteries and supercapacitors
 - 2.13.1 Properties
 - 2.13.2 Applications
- 2.14 Heat exchangers
 - 2.14.1 Properties
 - 2.14.2 Applications
- 2.15 Optics and imaging
 - 2.15.1 Properties
 - 2.15.2 Applications
- 2.16 HVAC
 - 2.16.1 Properties
 - 2.16.2 Applications
- 2.17 Global market revenues, 2018-2035
 - 2.17.1 Current market size
 - 2.17.2 By end-use market
 - 2.17.3 By region
 - 2.17.3.1 North America
 - 2.17.3.2 Europe
 - 2.17.3.3 Asia Pacific
 - 2.17.3.4 Latin America
 - 2.17.3.5 Middle East & Africa

3 MOF PATENTS

3.1 Global MOF patent applications

3.2 Patenting by sector

3.3 Patenting by regional authority

4 COMPANY PROFILES 83 (33 COMPANY PROFILES)

5 EX-PRODUCERS

6 DISTRIBUTORS

7 REFERENCES

List Of Tables

LIST OF TABLES

- Table 1. Example MOFs and their applications.
- Table 2. Summary of MOFs.
- Table 3. Properties of Metal-Organic Frameworks (MOFs).
- Table 4. Comparative analysis of Metal-Organic Frameworks (MOFs) and other porous materials.
- Table 5. Comparison of different synthesis methods for Metal-Organic Frameworks (MOFs).
- Table 6. Markets and applications of Metal-organic frameworks (MOFs).
- Table 7. MOF industry developments 2021-2024.
- Table 8. Factors affecting demand for MOFs.
- Table 9. Commercially available MOF products.
- Table 10. Applications of MOFs in gas storage and separation.
- Table 11. Comparison of carbon-capture materials.
- Table 12. Assessment of carbon capture materials
- Table 13. DAC technology developers and production.
- Table 14. Catalytic applications of MOFs.
- Table 15. Applications of Metal-Organic Frameworks (MOFs) in coatings.
- Table 16. Biomedical applications of MOFs.
- Table 17. MOF sensor applications.
- Table 18. Conventional and emerging technologies for heavy metal removal from wastewater.
- Table 19. Applications of Metal-Organic Frameworks (MOFs) in air and water filtration.
- Table 20. Applications of Metal-Organic Frameworks (MOFs) in water harvesting.
- Table 21. Applications of Metal-Organic Frameworks (MOFs) in batteries and supercapacitors.
- Table 22. Applications of Metal-Organic Frameworks (MOFs) in heat exchangers.
- Table 23. Applications of Metal-Organic Frameworks (MOFs) in optics and imaging.
- Table 24. Applications of Metal-Organic Frameworks (MOFs) in HVAC.
- Table 25. Global market revenues for MOFs, 2018-2035, Millions USD.
- Table 26. Global market revenues for MOFs by market, 2018-2035, Millions USD, medium revenues estimate.
- Table 27. Global market revenues for MOFs by market, 2018-2035, Millions USD, high revenues estimate.
- Table 28. Global market revenues for MOFs by region 2018-2035, Millions USD, conservative revenues estimate.

Table 29. Global market revenues for MOFs by region 2018-2035, Millions USD, high revenues estimate.

List Of Figures

LIST OF FIGURES

- Figure 1. Examples of typical metal-organic frameworks.
- Figure 2. Schematic drawing of a metal-organic framework (MOF) structure.
- Figure 3. Representative MOFs.
- Figure 4. Schematic of zeolite.
- Figure 5. Covalent organic frameworks (COFs) schematic representation.
- Figure 6. MOF synthesis methods.
- Figure 7. MOF synthesis methods historically.
- Figure 8. Solvothermal synthesis of MOFs.
- Figure 9. Electrochemical Synthesis method.
- Figure 10. Mechanochemical synthesis of MOFs.
- Figure 11. Market map: Metal-Organic Frameworks.
- Figure 12. Metal-organic frameworks (MOFs) value chain,
- Figure 13. SWOT analysis: MOFs market.
- Figure 14. Hydrogen storage.
- Figure 15. NuMat's ION-X cylinders.
- Figure 16. Schematic of Climeworks DAC system.
- Figure 17. Climeworks' first commercial direct air capture (DAC) plant, based in Hinwil, Switzerland.
- Figure 18. Flow diagram for solid sorbent DAC.
- Figure 19. Antibacterial mechanisms of metal-organic frameworks.
- Figure 20. Capture mechanism for MOFs toward air pollutants.
- Figure 21. Schematic of a MOF-based device for water harvesting.
- Figure 22. MOF-coated heat exchanger.
- Figure 23. MOFs applied in HVAC.
- Figure 24. Global market revenues for MOFs, 2018-2035, Millions USD.
- Figure 25. Global market revenues for MOFs by market, 2018-2035, Millions USD, medium revenues estimate.
- Figure 26. Global market revenues for MOFs by market, 2018-2035, Millions USD, high revenues estimate.
- Figure 27. Global market revenues for MOFs by region 2018-2035, Millions USD, conservative revenues estimate.
- Figure 28. Global market revenues for MOFs by region 2018-2035, Millions USD, high revenues estimate.
- Figure 29. Global MOF patent applications 2001-2022.
- Figure 30. Patent applications by sector.

Figure 31. Patent applications by authority.

Figure 32. Schematic of carbon capture solar project.

Figure 33. Mosaic Materials MOFs.

Figure 34. CALF-20 has been integrated into a rotating CO₂ capture machine (left), which operates inside a CO₂ plant module (right).

Figure 35. MOF-based cartridge (purple) added to an existing air conditioner.

Figure 36. Molecular sieving membrane.

I would like to order

Product name: The Global Market for Metal-Organic Frameworks (MOFs) 2024-2035

Product link: <https://marketpublishers.com/r/G1E9D7521804EN.html>

Price: US\$ 1,250.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G1E9D7521804EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970