Annual Report on Mg and Mg Alloys

INTERNATIONAL

国际镁及镁合金

年度发展报告

（2022 年）

国际镁学会 · 信息委员会

国际镁合金新材料科技有限公司（HK）

前　言

《国际镁及镁合金年度发展报告》是国际镁学会（International Mg Society）组织，由其下设信息委员会（Information Committee）执笔，针对全球镁及镁合金工业年度进展进行总结，2022 年为本报告的第一版。

国际镁学会（https://www.imsmg.org）是由重庆大学（中国）、Helmholtz Zentrum Hereon（德国）、Seoul National University（韩国）、Ohio State University（美国）和 University of Queensland（澳大利亚）等共同发起，于 2020 年成立的国际组织，目的是加强镁及镁合金领域的学术交流和产学研合作，促进全球镁行业技术合作、推进先进镁技术成果产业化。国际镁学会主办的国际刊物《Journal of Mg & Alloys》影响因子近年来大幅度升高，已成为全球同类 79 种 SCI 收录刊物的第一位。国际镁学会组织的国际镁科学技术奖已举行多次颁奖活动，在全球镁行业产生了重要影响。

《国际镁及镁合金年度发展报告（2022 年）》（以下简称《报告》）分为六个部分，第一章金属镁基础知识及应用领域、第二章镁工业发展情况、第三章研发单位和生产单位、第四章应用新领域及研发推广、第五章政策法规、第六章国际组织、国际刊物和国际奖励、第七章结束语（未来展望）以及三个附件（分别为现有牌号与 IMS 牌号对照、国际镁业年度大事记和历史回顾）。报告对镁及镁合金工业的年度发展情况进行了详细介绍，特别是针对原镁冶炼问题、镁合金新型应用（如生物医药、建筑模板、储能材料、镁基复合材料、一体化大型铸件等）领域等国际及行业热点问题和研究应用进展进行了阐述，对国际知名企业、高校、科研院所、国际组织及奖项等信息进行了介绍，对镁及镁合金领域的标准、专利等信息进行了分析。作为《报告》的第一版，本报告还从历史视角对金属镁的发现、发展和一般应用进行了回顾，并将在后续版本中保留这部分珍贵信息。

同时，国际镁学会在提供《国际镁及镁合金年度发展报告》的基础上，还将针对某些细分领域（如汽车、电子 3C、储能材料、生物医药等），提供详尽的市场分析、科研进展分析、标准体系分析、专利现状分析的子报告。欢迎镁业同行咨询购买。

《报告》在编制过程中，得到了来自于全球各地，特别是中国和欧美等方面

的大力支持，在确保信息及时准确的同时，还扩大了《报告》的应用范围，在这里一并感谢。

同时，《报告》在编制过程中搜索了大量公开信息。有关方面如果认为这些信息有不妥之处，请及时与我方联系，我们将针对报告内容进行必要调整。

2022年国际镁行业年度进展概述

2022 年，是国际镁行业发展历史上极为重要的一年。多国重新开展镁冶炼生产，以应对中国原镁价格剧烈波动带来的影响；金属镁应用领域继续扩大，镁基储能材料特别是镁电池应用得到充分论证并投入试运行;英文版《镁及镁合金》杂志影响因子蝉联全球同类期刊第一；国际镁学会成立信息委员会，开展以大数据为基础的金属镁国际标准、专利、认证认可等信息平台建设与应用；第 79 届世界镁业大会成功召开并成立可持续发展委员会；镁合金材料继续扩大在汽车、摩托、电子 3C、休闲户外等领域的应用。

2022 年，对于中国镁行业来说同样是值得特别回望、特别纪念的。这一年，恰逢皮江法炼镁工艺工业化的第 80 年（1942 年），是中国镁工业第 65 年（1957 年），也是中国加入 WTO 加快融入世界的第 20 年，中国改革开放再出发的第 30 年（1992 年邓公南巡）。中国镁产业走到今天，已经奠定了良好的发展基础，这期间的发展路径、历史经验和教训、产业积累和积淀都弥足珍贵，是中国产业成长最生动的案例和成功的样本，不仅对行业本身，也对中国经济和社会发展都有重要启示，尤其是在后疫情时代的当下。在这一年里，云海金属投资 47 亿元建设 4 个镁合金及其深加工项目；《科技日报》报道潘复生院士团队在镁电池和镁储能方面的研究成果；国际镁标准专家工作室落户广州；全国镁基储能材料创新联合体启动，大湾区氢能产业技术研究院揭牌。

2023 年，全球镁工业必将迎来难忘的一年，借 1 月 3 日《人民日报》报道中国工程院院士潘复生教授的一句话展望已经开启的 2023 年，那就是“让‘镁’走进千家万户”。

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Annual Report on Mg and Mg Alloys (2022)

International Mg Society • Information Committee

International Magnesium Alloys Advanced Materials Technology Limited (HK)

PREFACE

‘Annual Report on Mg and Mg Alloys’ is a review of the annual development of the global Mg industry, established by Information Committee on International Mg Society (IMS). The report on 2022 is the first version.

International Mg Society (https://www.imsmg.org) is an international organization jointly sponsored by Chongqing University (China), Helmholtz Zentrum Hereon (Germany), Seoul National University (South Korea), Ohio State University (the United States) and the University of Queensland (Australia). It was established in 2020 to strengthen academic exchange and cooperation between production, university and research in the field of magnesium and magnesium alloys, promote technical cooperation in the global magnesium industry, and accelerate the industrialization of advanced magnesium technology achievements. The international journal "Journal of Magnesium and Alloys" sponsored by IMS has gained spiking impact factor in recent years and has become the first of the 79 SCI included journals of the same kind in the world. IMS has organized and held many awarding activities for the International Magnesium Science and Technology Awards and has played a critical role on the global magnesium industry.

Annual Report on Mg and Mg Alloys (2022) (hereinafter referred to as the report) is divided into seven parts, namely, Chapter Ⅰ Basics and Applications of Magnesium, Chapter Ⅱ Development of Magnesium Industry, Chapter Ⅲ R&D And Production Units, Chapter Ⅳ New Application Fields and R&D Promotion, Chapter V Policies and Regulations, Chapter Ⅵ International Organizations, International Publications and International Awards, Chapter Ⅶ Conclusion (Future Outlook) and three Appendixes (Comparison Between Existing Designation and IMS Designation, Annual Events of International Magnesium Industry and Historical Review). The report has expounded the annual development of Mg and Mg alloy industry, especially on primary magnesium smelting, new applications of magnesium alloys (such as biomedicine, building templates, energy storage materials, magnesium matrix composites, integrated

large castings, etc.) and other global hot spots and research and application progress. It's introduced internationally renowned enterprises, universities, scientific research institutes, international organizations and awards. It's also analyzed the standards and patents in the field of magnesium and magnesium alloys. This report as the first version has also reviewed the discovery, development and general application of magnesium from a historical perspective, which will be retained in subsequent versions.

Besides this report, IMS will also provide detailed market analysis, scientific research progress analysis, standard system analysis, and current status analysis of patent for certain segments, such as automobile, electronic 3C, energy storage materials, biological medicine, etc. Welcome your consultation and ordering.

We would like to express our sincere acknowledgement to those who make a great devotion to the preparation of the report from all over the world, especially from China, Europe and the United States. The report due to their efforts ensures timeliness, accuracy and larger scope of application.

Since extensive public information has been searched for the report, please contact us in a timely manner if certain part is considered to be improper, and we will make necessary modification.

Overview of Annual Progress of International Magnesium Industry in 2022

2022 is an extremely important year in the development history of the international magnesium industry. Many countries have resumed magnesium smelting production to cope with the impact of the drastic fluctuations in the price of raw magnesium in China. The magnesium applications are increasing, where the magnesium based energy storage material, especially magnesium batteries, has been fully demonstrated and put into trial operation. The impact factor of the English edition of "Journal of Magnesium and Alloys" has ranked first in the world's similar journals. IMS has set up Information Committee to carry out the construction and application of international standards, patents, certification and other information platforms for magnesium based on big data. The 79th World Magnesium Congress was successfully held and the Sustainable Development Committee was established. 2022 has also seen the been mounting-up magnesium applications in automobile, motorcycle, electronic 3C, leisure outdoor and other fields.

The year 2022 is also worth looking back and commemorating for China's magnesium industry. It is the 80th year (1942) of the industrialization of Pigeon magnesium smelting process, the 65th year (1957) of China's magnesium industry, the 20th year of China's accession to the WTO to accelerate its integration into the world, and the 30th year of China's reform and opening up (Deng Xiaoping's tour in South China in 1992). Today, China's magnesium industry has laid a good foundation for development. The development path, historical experience, lessons, and industrial accumulation during this period are precious, covering the most vivid and successful cases of China's industrial growth and enlightening magnesium industry and China's economic and social development, especially in the post-epidemic era. In this year, Yunhai Metal invested 4.7 billion yuan to build four magnesium alloy and deep processing projects; Science and Technology Daily reported the research results of Academician Pan Fusheng's team in magnesium

battery and magnesium energy storage; The International Magnesium Standard Expert Workshop has settled in Guangzhou; The National Magnesium-based Energy Storage Materials Innovation Consortium was launched and the Great Bay Area Hydrogen Energy Industry Technology Research Institute was unveiled.

In 2023, the global magnesium industry will usher in an unforgettable year. On January 3, the People's Daily reported that Professor Pan Fusheng, an academician of the CAE Member, looked forward to the 2023 year that has already started, that is, "let 'magnesium' enter thousands of households".

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