PetroChina (Shanghai) Advanced Materials Research Institute and CAS publish data-driven analysis of global polymer innovation

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COMUNICATO STAMPA â?? CONTENUTO PROMOZIONALE

Joint report analyzes nearly one million publications to map emerging trends in polymer science

SHANGHAI and COLUMBUS, Ohio, Aug. 5, 2026 /PRNewswire/ â?? PetroChina (Shanghai) Advanced Materials Research Institute Co., Ltd. (SAMRI), a research arm of China National Petroleum Corporation (CNPC) and CAS, a division of the American Chemical Society, today released Polymer Frontiers: A Comprehensive Data-Driven Analysis of Emerging Trends. The report is the organizationsâ?? first joint publication, combining SAMRI material science expertise with CAS scientific data and analysis capabilities to map where global polymer innovation is headed.

â??Polymer science is advancing on multiple fronts simultaneously, and the organizations shaping that future need a data-driven picture of where innovation is occurring, not just where conventional wisdom points. This report brings together CAS scientific intelligence with SAMRI industrial expertise to provide exactly that,â?• said Tim Wahlberg, Interim President, CAS.

Polymer Frontiers draws on nearly one million polymer-related journal and patent records from 2015 to 2025 in the CAS Content Collectionâ?¢, the worldâ??s largest curated scientific database. Using advanced bibliometric analysis and natural language processing, it identifies research hotspots, maps competitive positioning across geographies and institutions, and tracks emerging application domains. The report covers four high-priority application areas: polymers in energy storage, sustainable polymers, flexible electronics, and membrane technologies, also examines eight emerging frontiers, from next-generation polyesters and dynamic polymer networks to framework-polymer hybrids and conductive polymer systems.

Among the reportâ??s findings: Asia-Pacific has emerged as the dominant center of polymer innovation, with China leading in fundamental research output and patent development across strategic

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domains including flexible electronics, energy storage, and membrane technologies. The report documents substantial growth in sustainable polymer research, with bio-based materials competing on performance criteria rather than environmental benefits alone. Energy storage applications show concentrated innovation around battery technologies, which account for an overwhelming 75% of all polymer-related energy storage patents. Clean energy demands are also driving rapid expansion in advanced membrane systems, particularly anion exchange membranes for fuel cells and electrolyzers.

â??At SAMRI, we are committed to bridging fundamental polymer science with large-scale industrial applications that will define the next generation of materials. The report, jointly released with CAS, systematically reviews global innovation trends in both the academic and industrial sectors of polymers from a rigorous, scientific global perspective. It provides us with a clearer understanding of the global innovation competitive landscape and offers key guidance for our strategic research direction in advanced materials.â?• said Dr. Xudong Huang, Vice President of SAMRI.

Polymer Frontiers: A Comprehensive Data-Driven Analysis of Emerging Trends is available in English and Chinese at https://www.cas.org/resources/cas-insights/polymer-frontiers.

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About PetroChina (Shanghai) Advanced Materials Research Institute

Founded in December 2021, PetroChina (Shanghai) Advanced Materials Research Institute (SAMRI), a wholly owned subsidiary of China National Petroleum Corporation (CNPC), is located in the Shanghai Lin-gang Special Area. SAMRI focuses on advanced materials research and development, covering electronics, transportation, aerospace, biomedical polymers, green and sustainable materials, and new energy materials. To drive CNPCâ??s transformation from traditional refining and petrochemicals to advanced and sustainable materials, SAMRI serves as an integrated innovation platform spanning fundamental research, product and application development, scale-up, and commercialization, with a 72,000-sqare-meter state-of-the-art R&D center and pilot plants in Nantong, Jiangsu.

About CAS

CAS connects the worldâ??s scientific knowledge to accelerate breakthroughs that improve lives. We empower global innovators to efficiently navigate todayâ??s complex data landscape and make confident decisions in each phase of the innovation journey. As a specialist in scientific knowledge management, our team builds the largest authoritative collection of human-curated scientific data in the world and provides essential information solutions, services, and expertise. Scientists, patent professionals, and business leaders across industries rely on CAS to help them uncover opportunities, mitigate risks, and unlock shared knowledge so they can get from inspiration to innovation faster. CAS is a division of the American Chemical Society. Connect with us at cas.org.

Media Contacts

Peter CarltonSenior Communications Manager, CAS CAS-PR@cas.org

Ziyin FanMarketing Communication Manager, SAMRIZiyin.fan@petrochina.com.cn

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