

Introduction

THE FUTURE DEVELOPMENT OF SCIENCE WILL CONTINUE TO MAKE INROADS INTO THE MACRO AND MICRO WORLDS.

The invention of the scanning tunneling microscope in 1981 gave birth to nanoscience and nanotechnology, which aided scientists' exploration of the microscopic world between nanometers, a metric unit of length that describes a billionth of a meter. Nanoscience and nanotechnology refer to the research of quantum properties and interactions of substances at the nanoscale, such as atoms and molecules. These also seek to investigate the interdisciplinary sciences and technologies that leverage these characteristics. Through the lens of nanoscience and nanotechnology, humankind's understanding of the world extends, and new means to shape the world at the atomic and molecular level emerge. Nanotechnologists aim to produce products with specific functions based on nanoscale substances' novel physical, chemical, and biological properties¹.

By assessing and changing the world's future one micron at a time, the field of nanoscience and nanotechnology has been drastically expanding since the 20th century. As a young and dynamic research and application field, it is transforming the world as we know it, delivering revolutionary advancements to industries such as manufacturing and health care. Aided by their interdisciplinary, comprehensive, and fundamental characteristics, nanoscience and nanotechnology have become the driving force in science development.

Nanotechnology has also established its value in various economic sectors. Besides the nanomaterials field in the new material industry, nanotechnology applications in the areas of energy and environment, biomedicine, information devices, and green manufacturing have become increasingly prominent, with promising prospects.

¹ Bai, Chunli. (2005). Nanoscience & technology: Dream and reality. Proceedings of the 2004 China Nanotechnology Application Symposium.

Given the strategic significance of nanoscience and nanotechnology, it is essential to evaluate and predict their developmental trends. This book is based on the largest abstract and citation database of peer-reviewed literature, Elsevier's Scopus, along with the research evaluation platform SciVal. The funding and patent analysis data for the book are from Funding Institutional and PatentSight, respectively. **This book provides an evaluation of Nanoscience's scientific output, role, contribution, and impact** through bibliometric analysis, combined with big data indicators of nanoscience scientific results and patents from 2000 to 2019.

Please refer to the Appendix for the definition of nano-publications and the indicators used in the book.