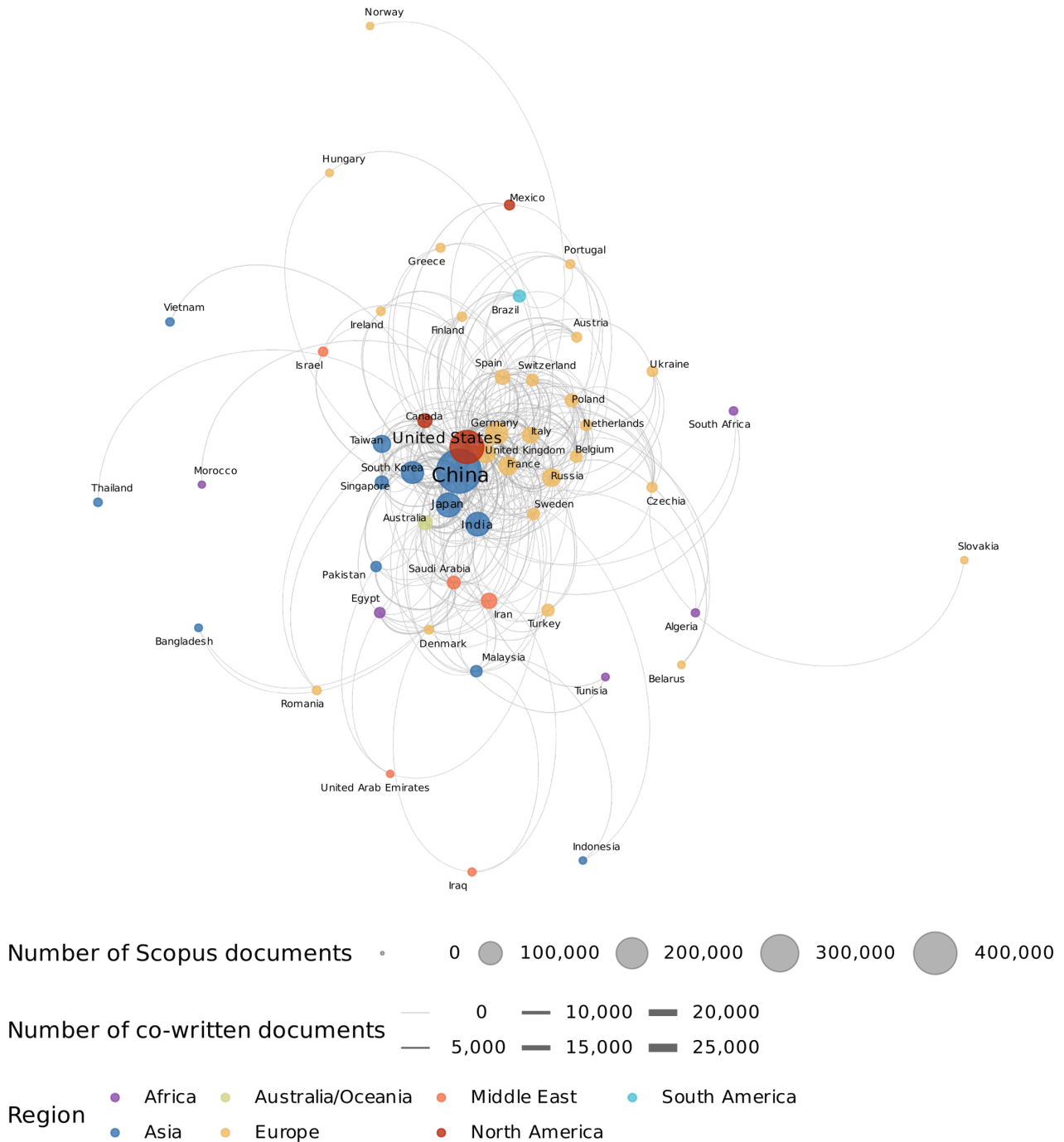


# International Collaboration in Semiconductor Research

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An international network of researchers and institutions supports the publication of research related to semiconductors, identified by the federal government as a critical and emerging technology (see section “Invention in Critical and Emerging Technologies: International Patenting”). Semiconductor research publications have tripled over the last 20 years, reaching more than 100,000 articles in 2024. By 2024, China accounted for the largest share of semiconductor publications (44%). China and the United States, central entities in global semiconductor research collaboration, were the largest contributors in terms of cumulative publications from 2002 to 2024 (Figure A). China and the United States were the top country coauthorship pair, coauthoring nearly 27,000 articles over this period. The next-largest coauthorship pairs were the United States and South Korea and then the United States and Germany, with each pair generating about 10,000 articles. Either the United States or China were part of each of the top 10 country coauthorship pairs. In 2024, 53% of semiconductor publications by U.S. authors were international collaborations, while 17% from China were international collaborations.

Figure A. Semiconductors collaboration network, by selected region, country, or economy pairs: 2002–24



**Note(s):**

This network diagram shows the number of coauthored articles by all pairs of regions, countries, or economies within the top 60 producers of semiconductor-related research based on whole counting for those pairs that cowrote 400 articles or more. Semiconductor article counts refer to publications algorithmically fingerprinted under semiconductors from conference proceedings and peer-reviewed journals in S&E fields in Scopus. Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) of the author(s) listed in the article. Links are only shown in a single direction, dictated by alphabetical order. The size of the nodes is proportional to the total number of semiconductor-related articles written by each region, country, or economy. The width of the links between nodes is proportional to the quantity of articles both regions, countries, or economies have coauthored. Positioning of nodes is defined using the Kamada-Kawai algorithm.

**Source(s):**

NCSES; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed August 2025.