



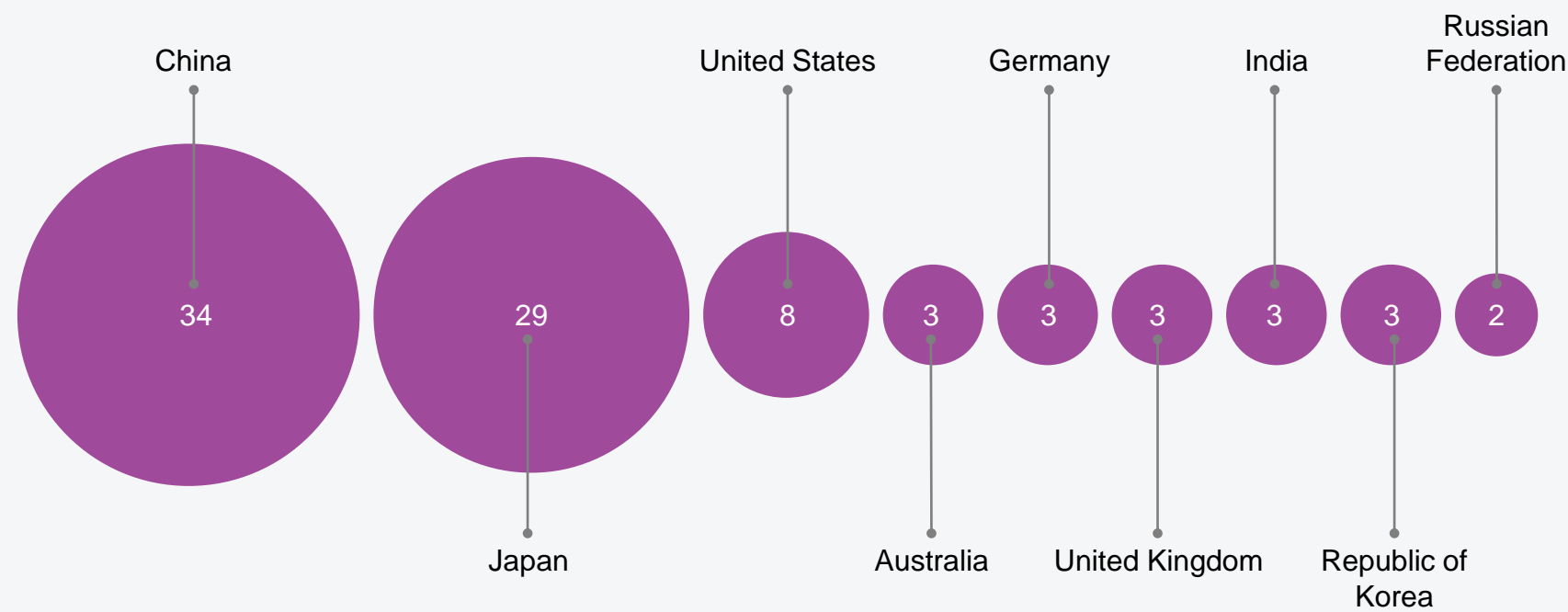
# Patent Landscape

## Production of Titanium Metal

Titanium metal is a silver-white metal that is not found in nature because of its strong affinity to oxygen, carbon and nitrogen. It has low density, good strength, excellent corrosion resistance to salt and acids, and low electric and thermal conductivities. Titanium metal is used in many different applications owing to its special properties. For the production of titanium metal, titanium dioxide (TiO<sub>2</sub>) or titanium tetrachloride (TiCl<sub>4</sub>) derived from the chloride process are typically used. This infographic focuses on the patent landscape of Production of titanium metal.

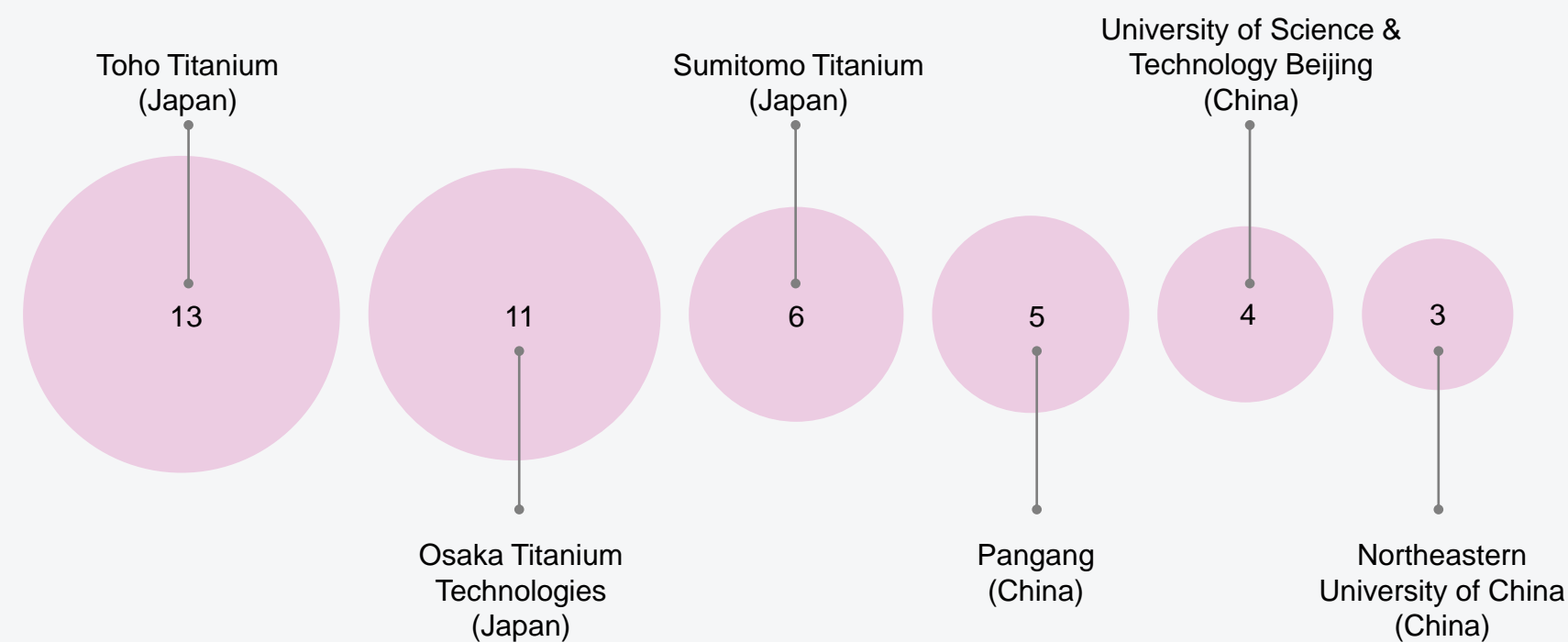
### Where were the patents filed?

Relevant patent families by country of first priority, 2002–2021.



### Who were the top patent filers?

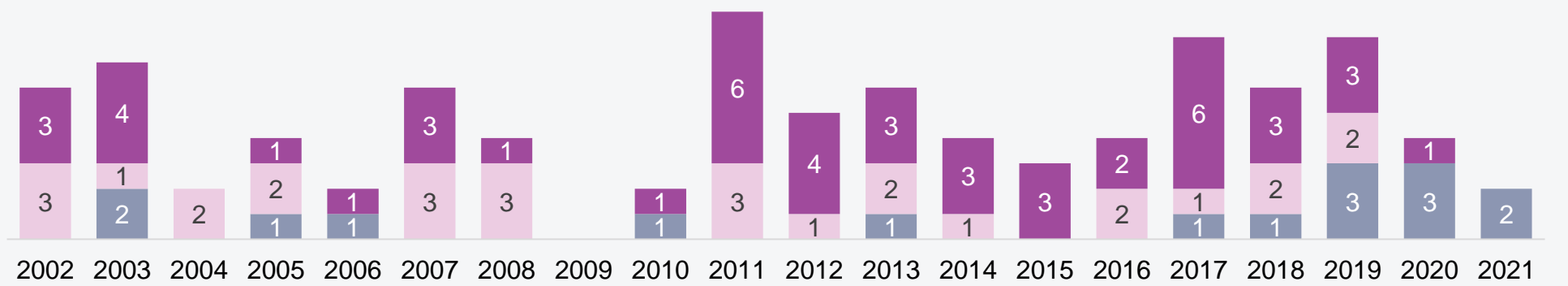
Relevant patent families by patent applicants, 2002–2021.



### Patent activity on titanium metal production from ilmenite has been steady since 2002.

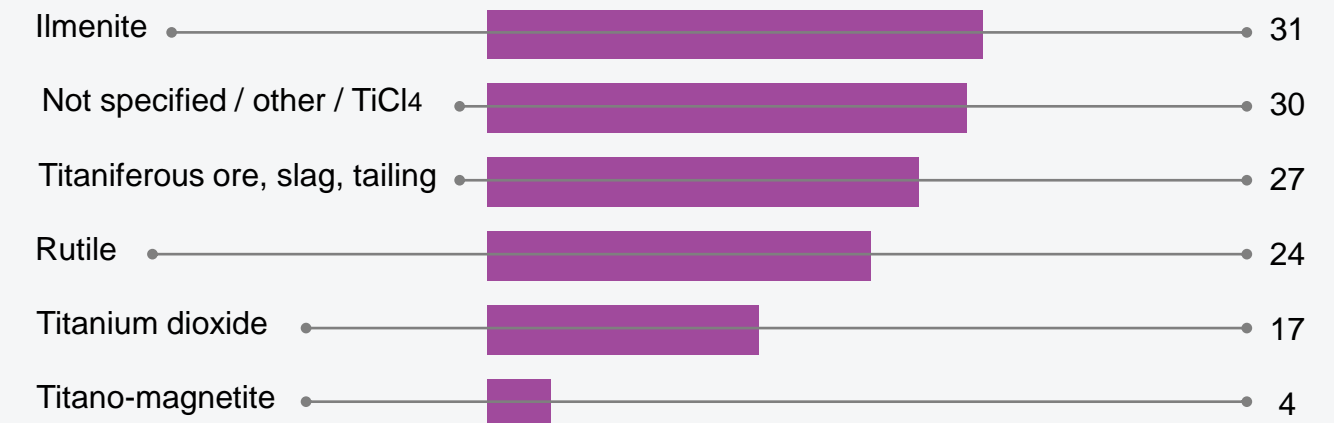
Number of relevant patent families based on first priority year, 2002–2021

Pending Lapsed Granted



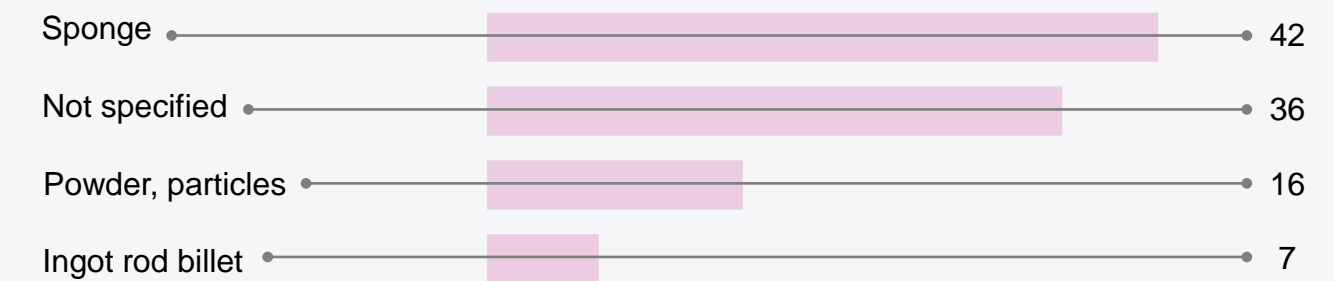
### Titanium metal can be obtained not only starting from ilmenite, rutile, slags and titanium dioxide, but also from TiCl<sub>4</sub> obtained by the chloride process.

Patent families categorization for titanium metal production according to titanium source



### Titanium metal is usually obtained in the form of sponge, but can be reprocessed to obtain a powder or ingots.

Patent families categorization for titanium metal production according to titanium final product



### Magnesium is described as a reduction agent in half of the patent families.

Patent families categorization according to the reducing agent

