that they would collaborate on a large carbon-capture-and-storage project on the Texas Gulf Coast. The firms aim to make blue hydrogen, produced by reforming natural gas and storing the by-product carbon dioxide. Linde will distribute this hydrogen to customers via its regional pipeline network. The firms aim to store some 15 million metric tons of CO₂ annually in underground formations. In Austria, Linde is building a plant to make green hydrogen—derived from water electrolysis powered by renewable energy—for sale to the semiconductor maker Infineon Technologies. To help shore up helium supply, Linde is adding an extraction unit at a natural gas liquefaction plant in Texas. The project will increase the world’s supply of helium by more than 3%.

### 14 Air Liquide

**2021 chemical sales: $27.1 billion**

Late last year, the French industrial gas giant Air Liquide got into a business that is as high tech as a chemical business can get. It signed an agreement with the Canadian nuclear power operator Laurentis Energy Partners to buy helium-3, a light isotope of helium formed via the β decay of the heavy hydrogen isotope tritium. Air Liquide will market 5,000–10,000 L of the ³He annually. The isotope is needed for quantum computing, which must operate at temperatures as close to absolute zero as possible. Conventional liquid ⁴He cooling can get down to 1–4 K, and getting below that requires mixing in some ³He. Separately, Air Liquide is building what it calls the world’s largest biomethane plant, at a Chicago-area landfill. The industrial gas maker estimates that the collected methane could generate 380 GW h of energy annually. It is also building a methane recovery plant in Wisconsin.

### 15 Syngenta Group

**2021 chemical sales: $24.9 billion**

The Chinese conglomerate ChemChina bought the Swiss agrochemical maker Syngenta in 2017 and later pursued a merger with another big Chinese industrial giant, Sinochem. Now Syngenta Group operates under the Sinochem umbrella. As it did when it was independent, Syngenta emphasizes technology. It is collaborating with Enko Chem, a start-up that applies drug discovery methods to agricultural applications. For instance, the partners will screen molecular libraries for compounds that act against specific enzymes in pests. They hope to halve the time to bring new molecules to market—which can now take a decade. Syngenta also recently bought two biopesticides from the Welsh firm Bionema. In the deal, it acquired nematodes that kill leatherjackets and a pathogenic fungus that kills vine weevils.

### 16 Reliance Industries

**2021 chemical sales: $22.6 billion**

The Indian conglomerate has abandoned plans to put its refining and chemical operations—which it calls Oil to Chemicals—into a stand-alone business. It also walked away from negotiations with Saudi Aramco to sell a 20% stake in the business for $15 billion. Instead, Reliance Industries is undertaking what may turn out to be an even bigger change in direction. Last year, it announced an ambitious goal to achieve net-zero carbon emissions by 2035. Reliance is setting aside 2,000 hectares of land at its massive Jamnagar refinery and petrochemical complex for factories that would make photovoltaic modules, batteries, electrolyzers, and fuel cells. Along these lines, Reliance bought