

Plasma-induced Synthesis of Ammonia

Topic suitable for Bachelor Thesis / Plant Design

Green ammonia, a chemical derivative of hydrogen, is a promising option for storing green hydrogen. It therefore has a key role to play on the road to a decarbonized energy economy. Despite intensive efforts, there is currently a lack of local, environmentally compatible ways to produce ammonia. Non-thermal plasma reactors open up the possibility of producing ammonia decentrally under mild reaction conditions from nitrogen and green hydrogen. They represent a trend-setting step towards a sustainable, decarbonized energy economy with the potential to save up to 2.2 t CO₂ / t NH₃. The principle is based on the discharge-induced ionization of the passing gases, which are thus stimulated to chemically react to form ammonia.

The aim is to support an ongoing MSc thesis in the systematic investigation of different operating modes, electrode materials, reactor geometries and catalysts to optimize the ammonia yield.

