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(57) Abstract :
An apparatus (100) and a method of sustainable ammonia production by capturing atmospheric nitrogen (103) using a photocatalytic reactor (104) is provided. The method includes pumping atmospheric air (106) into a basic solution of sodium hydroxide (NaOH) to remove impurities and carbon dioxide (CO2) from the air, and to isolate 10 nitrogen gas from the air; and passing it into photocatalytic reactor (104) along with bidistilled water and a predetermined photocatalyst and subjecting the isolated nitrogen gas (103) and bi-distilled water to a photocatalysis process under predetermined light conditions in photocatalytic reactor (104) for generating ammonia (108). The apparatus (100) includes a purification unit (102) to remove impurities from the air and to isolate 15 nitrogen gas from it. The air is pumped into purification unit (102); and a photocatalytic reactor (104) for subjecting isolated nitrogen gas along with bi-distilled water to a photocatalysis process under predetermined light conditions and along with a predetermined photocatalyst for generating ammonia (108).

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