Strategies to Enhance Electrochemical Ammonia Production from Nitrogen gas

장윤정†
한양대학교
(yjang53@hanyang.ac.kr†)

Ammonia (NH3) is a key commodity in industry and a carbon-free sustainable energy source. The electrochemical nitrogen reduction (ENRR) has attracted research topic as a way to directly convert nitrogen gas (N2) dissolved in aqueous solution to NH3 under ambient temperatures and pressures. The primary current challenge of ENRR is its low Faradaic efficiency (FE) for NH3 production because the standard reduction potential of N_2 to NH_3 is very close to that of water to hydrogen(H2). Furthermore, since the conversion of N_2 to NH_3 is much more kinetically complex than that of water to H2. Another challenge of ENRR is its limited amounts of N2, because its solubility in the aqueous electrolyte is only 1 mM at 20℃ and 1 bar. In this talk, we will present multiple effective strategies to overcome the challenges and how each strategies affects catalytic performances.