

수소사회 가치사슬 강화를 위한 수소액화기술:  
연구 현황과 방향

이문용<sup>†</sup>

영남대학교

(mynlee@yu.ac.kr<sup>†</sup>)

Most futuristic studies on 100% renewable energy sources and subsequent power-to-gas/fuel/liquid/X technological developments are based on hydrogen (H<sub>2</sub>) to mitigate CO<sub>2</sub> emissions and climate change. As an energy vector, long-term H<sub>2</sub> storage and transportation over long distances restrict its feasibility, mainly due to its low energy density. Liquefaction is a promising option for overcoming these issues, however, requires a large amount of energy. If the H<sub>2</sub> itself is used to provide this energy, then 25% to 35% of the initial quantity of H<sub>2</sub> is consumed. This talk introduces the major challenges and issues associated with the hydrogen liquefaction processes for its commercialization and attempts to solve the issues inherent to the hydrogen liquefaction industry. The hydrogen liquefaction processes are also assessed multi-dimensionally by assessing the challenges associated with hydrogen liquefaction, configuration modifications, and process.