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Sommario/riassunto	The general objective of this thesis was to explore the potential of in-situ H2O removal during fuel-related synthesis reactions with focus on in-situ H2O removal by hydrophilic membranes and by chemical reaction. It is demonstrated that in-situ H2O removal through vapour permeation during CO2 hydrogenation to Fischer-Tropsch hydrocarbons and during DME/DEE synthesis leads to increased conversion and yield levels, which are directly linked to the degree of H2O recovery.