Separation of Flue Gas Components by SILP (Supported Ionic Liquid-Phase) Absorbers - DTU Orbit (17/12/2018)

Separation of Flue Gas Components by SILP (Supported Ionic Liquid-Phase) Absorbers
Reversible absorption of the flue gas components CO₂, NO, NO₂ and SO₂ has been tested for different ionic liquids (ILs) at different temperatures and flue gas compositions where porous, high surface area carriers have been applied as supports for the ionic liquids to obtain Supported Ionic Liquid-Phase (SILP) absorber materials. The use of solid SILP absorbers with selected ILs were found to significantly improve the absorption capacity and sorption dynamics at low flue gas concentration, thus making the applicability of ILs viable in technical, continuous flow processes for flue gas cleaning. The results show that CO₂, NO and SO₂ can be reversible and selective absorbed using different ILs and that Supported Ionic Liquid-Phase (SILP) absorbers are promising materials for industrial flue gas cleaning. Absorption/desorption dynamics can be tuned by temperature, pressure and gas concentration.

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