

# “The Optimization of Wet-Amino Acid Polymerized Ionic Liquids (Wet-AAPILs) for CO<sub>2</sub> Capture”

**Dr. Maisara Shahrom Raja Shahrom**  
Associate Professor Dr. Cecilia Devi Wilfred  
Faculty of Integrated Life Sciences  
**QUEST International University**

Amino acid polymerized ionic liquids (AAPILs) were formed by polymerizing the ILs monomer with amino acid as anion. By tethering the amine functionalized at anion, it would enhance the CO<sub>2</sub> sorption intake. Wet-AAPILs is the additional of water in the dry-AAPILs, gave higher CO<sub>2</sub> sorption than the latter. However, the optimization of water in wet-AAPILs for CO<sub>2</sub> sorption is still scarce. Therefore, the aim of this research is to achieve the optimization condition of wet-AAPILs which gives the highest CO<sub>2</sub> sorption capacity. This was carried out by using the Respond Surface Methodology (RSM) by selecting three parameters which were pressure, temperature and water composition using Box-Behken model. The experimental data were fitted into two factorial interactions. Pressure was found to be the most influential variable. As it increased, the CO<sub>2</sub> sorption increased linearly. The composition of water to the wet-poly[VBtMA][Gly] also has a tremendous effect to CO<sub>2</sub> adsorption which it increased with 10wt% of water but decreased with 90 wt% of water. On the contrary, temperature showed no significant effect to the CO<sub>2</sub> adsorption. The optimum condition of wet-poly[VBtMA][Gly] was at 20 bar, 25 °C and at 50wt% of water with 1092 mmol/g.

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