**CFD INVESTIGATION INTO POST-COMBUSTION CARBON CAPTURE**

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**ABSTRACT**

The utilisation of amine based solvents such as monoethanolamine (MEA) during the post-combustion CO2 capturing process is of increasing interest. The use of computational fluid dynamics (CFD) to simulate the process would be advantageous for the optimisation of operating conditions and reactor designs to reduce costs and increase performance. The process requires exhaust fumes to be counter-currently mixed with an MEA solution over a large interfacial area in a large column reactor, known as an absorber. Unfortunately, CFD modelling of the complete process is difficult due to the different scales which need to be considered, such as the near-wall liquid-gas interface, the meso-scale behaviour between the compact structured packing and the large-scale flow dynamics within the complete absorber.



5.79 4.20

5.50 3.99

5.21 3.78

4.92 3.57

4.63 3.36

4.34 3.15

4.05 2.94

3.76 2.73

3.47 2.52

3.19 2.31

2.90 2.10

2.61 1.89

2.32 1.68

2.03 1.47

1.74 1.26

1.45 1.05

1.16 0.84

**b)**

**c)**

**a)**

0.87 0.63

0.58 0.42

0.29 0.21

0.00 0.00

**Figure 1**: **a)** Structural packing element, **b)** velocity within channels of element and **c)** velocity within center of element, (m/s).

The present work looks at the flow dynamics within a meso-scale element of Montz-Pak commercial structural packing. The pressure drop is determined over a range of velocities for different fluid properties and variation of the corrugated inclination angle are considered, which was not carried out previously. The pressure drop data gained could then be implemented into large-scale porosity models in future work. This would be an improvement over previous models which estimated the pressure drop in the structured packing sections of the absorber.