NOMENCLATURE

Abbreviation

1-(2-HE)PP : 1-(2-hydroxyethyl)-piperidine

1-(2-HE)PRLD : 1-(2-hydroxyethyl)pyrrolidine

2DMA2M1P : 2-(dimethylamino)-2-methyl-1-propanol

3DEA-1,2-PD : 3-(diethylamino)-1,2-propanediol

3DMA-1,2-PD : 3-(dimethylamino)-1,2-propanediol

AAD : Average Absolute Deviation

AEEA : 2-(2-aminoethylamine)ethanol

AEP : 1-(2-aminoethyl)piperazine

AIMD : Ab initio molecular dynamics

AMP : 2-amino-2-methyl-1-propanol

ANN : Artificial Neural Network

ARD : Average Relative Deviation

ASAR : Amine-structure activity relationship

ASPR : Amine-structure property relationship

BDA : 1, 4-Butanediamine

BDEA : Butyldiethanolamine

CA : Carbonic Anhydrase

CCS : Carbon Capture and Storage

CCUS : Carbon Capture Utilization and Storage

DAP : 1, 3-diaminopropane

DE-1, 2-PD : 3-diethylamino-1,2-propanediol

DEA : Diethanolamine

DEAP-12 : 1-diethylamino-2-propanol

DEEA : 2-(Diethylamino)ethanol

DETA : Diethylenetriamine

DFT : Density function theory

DGA : Diglycolamine

DIPA : Diisopropanolamine

DMAB : 4-(dimethylamino)-2-butanol

DMAEA : 2-Dimethylaminoethylamine

DMAEOE : 2-(2-(dimethylamino)ethoxy)ethanol

DMAP-12 : 1-dimethylamino-2-propanol

DMAP-31 : 3-dimethylamino-1-propanol

DMAPA : 3-Dimethylaminopropylamine

DMEA : 2-(Dimethylamino)ethanol

DM-model : Deshmukh-Mather model

DPAB : 4-(dipropylamino)-2-butanol

DRC : Differential Reaction Calorimeter

EAE : 2-(ethylamino)ethanol

EDA : Ethylenediamine

EDEA : Ethyldiethanolamine

GHG : Greenhouse gas

HEEAB : 4-((2-hydroxyethyl)(ethyl)amino)-2-butanol

HEMAB : 4-((2-hydroxyethyl)(methyl)amino)-2-butanol

HMDA : 1,6-hexamethyldiamine

IEA : International Energy Agency

IPCC : Intergovernmental Panel on Climate Change

KE-model : Kent-Eisenberg model

MAE : 2-(methylamino)ethanol

MAPA : N-methyl propane-1, 3-diamine

MDEA : N-methyl diethanolamine

MEA : Monoethanolamine

MEDA : N-methylethylenediamine

M-KE : modified-Kent-Eisenberg Model

PZ : Piperazine

TEA : Triethanolamine

TEMED : 1, 2-bis (dimethyl amino) ethane

TEPA : Tetraethylenepentamine

TETA : Triethylenetetramine

TOC : Total Organic Carbon

TREA : Triethylamine

UNFCC : United Nations Framework Convention on Climate Change

VLE : Vapor-Liquid Equilibrium

Symbol

C_T : total amine concentration ($kmol/m^3$)

K_1 : protonation constant

k_2 : reaction rate constant

M_{HCl} : concentration of HCl solution (M)

M_{sample} : concentration of amine sample (M)

m : concentration of amine sample (mol/kg)

p_{CO2} : partial pressure of CO_2 (kPa)

P_T : total pressure (kPa)

T : temperature (K)

T_{RT} : room temperature (°C)

Vco_2 : volume of CO_2 evolved (ml)

V_{HCl} : volume of HCl (ml)

V_{sample} : volume of amine sample (ml)

X : mole fraction of activator in total amine solution

Greek letter

α : CO_2 loading or solubility (mol CO_2/mol amine)