



SDI Review Form 1.5

PART A:

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	MS: 2012/BJAST/1789
Title of the Manuscript:	VAPOR-LIQUID EQUILIBRIUM CALCULATION OF MULTI-COMPONENTS SYSTEM WITH ESTIMATION OF PRE-HEAT TEMPERATURE

(Note: Title of different sections as proposed below may differ in case of review paper)



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PART B: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part and write here 'Corrected' if not agreed, give suitable justifications)
General comment:	It is a meaning work of this article for estimation the pre-heated temperature in the flash calculation. And the data may be very important for the process design and apparatus operation.	The major data for the process design and apparatus operation have been obtained and are available.
Specific comments:	Very little calculation result was done by the author, and whether or not the non-idealities of vapour phase and liquid phase are taken into consideration.	Detail calculations results are available on research book which has been summarised in this article with the most important results presented. The condition of the phases has been stated to be low molecular force field which is for ideal state and which is highly applicable and accurate for industrials' use where there are often multi-components feeds
Title and abstract	The abstract is too long, and should be shortened in not more than 150 to 200 words.	corrected
Introduction (Is the problem/objective of this study original, important and well defined?)	1) Line 34, Eq.(1.1) should be written in $y_i \hat{\phi}_i p = \gamma_i x_i p'_i$ 2) Line 35, "Where ϕ is the fugacity coefficient", be corrected in "Where $\hat{\phi}_i$ is the fugacity coefficient of the component i". 3) Line 38, Eq.(1.2) should be written in $y_i p = x_i p'_i$. 4) I am not sure that the system is supposed to be ideal or non-ideal. while the system is non-ideal, what equation state and activity coefficient model are used to describe the non-idealities of vapour phase and liquid phase.	1)It should be ϕ_i because $\phi_i = \frac{\Lambda}{\phi_i^{sat}}$ (Smith et al 1990, 2005, Page 434 and Page 492) 2) ϕ_i is the ratio of fugacity coefficients of component i 3)Corrected 4) The condition in the theories has been based on ideal state essential for industrial multi-components separation
Are all the references cited relevant, adequate? Are there any other suitable current references authors need to cite?		
Materials & methods (Kindly comment on the suitability of the methods. Sufficient details of the methods should be provided to allow peers to evaluate and/or replicate the	1) 'Thus, the need to calculate the vapor of 89 each component of the mixture' should be corrected to "Thus, the need to calculate the vapor	1) Corrected 2)We have used the most common way



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work)	pressure of 89 each component of the mixture” 2) Line 109, Eq. (2.4) , all of the variables should be written in case letters. 3) Line 110, p_{VP} should be $p_{VP,i}$ 4) Line 114, what is the parameter n in the Eq.(2.5) 5) Line 125 Eq. (2.7) should be $y_i \hat{\phi}_i p = \gamma_i x_i p'_i$ 6) Line 126, what does the ‘of relatively low molecular force field’ mean? 7) Line 127 ϕ should be $\hat{\phi}_i$. 8) Line 131, where is the Equation (3.6)? 9) Line 145, Eq. (2.15) should be $1 = \sum_i \left(\frac{y_i \hat{\phi}_i p}{\gamma_i p'_i} \right)$ 10) Line 166, Eq.(2.19) should be $\frac{y_i}{x_i} = \frac{\gamma_i p'_i}{\hat{\phi}_i p} = k_i$ 11) Lin 169, Eq. (2.20) should be $k_i = \frac{p'_i}{p}$ 12) Line 170, “ vapor pressure via Wagner....” be corrected to “ vapor pressure of component i via Wagner....”. 13) Line 181, what is Eq. (3.19)? 14) Line 187, Eq. (2.23) should be $x_i = \frac{Fz_i}{L + V k_i}$ 15) Line 199, Eq.(2.28) should be $\sum_i (y_i - x_i) = 0$ 16) Line 211, what is the concept of enthalpy balance? And suggest to use energy conversation or the First law of thermodynamics. 17) Line 221 and Line 223, Eq.(2.31) should be Eq.(2.30). 18) Line 237, What is the parameter of N_{CPI}	to denote each of those variables for easy identification 3)This is initially written as commented 4)n is constant for each component and is provided by Polling et al 2001) 5)The only different here is ϕ_i^λ written as ϕ_i and this has already being explained 6) It means of low molecular mass (not greater than 142g/mol for each component ,which is a condition that is necessary for the system to be subjected to ideal condition with corresponding accurate results 7)Already explained 8)It should be Equation (2.8) 9) Corrected 10)Corrected 11) Corrected 12)Corrected 13) It is typo error. It should be Eq.(2.19) 14)Corrected
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		15)Corrected 16)The enthalpy balance here is also based on the concept of the first law of thermodynamics 17)Corrected 18)It is equivalent to the total number of heat capacities for each component over the entire temperature range
Results & discussion (Kindly comment on: 1. Are the data well controlled and robust? 2. Authors should provide relevant references during discussion. 3. Discussion and conclusions should be based on actual facts and figures. Biased claims should be pointed out. 4. Are statistical analyses must for this paper? If yes, have sufficient and appropriate statistical analyses been carried out?)	1) Very little discussions about all of the Figures and Tables in this part. 2) Little conclusions can be drawn from the results.	1)Corrected 2) Corrected
Are there any ethical or competing interest issues?		
Conclusion (Is the conclusion supported by the data, discussed inside the manuscript? Conclusions should not be biased and should be based on the data, presented inside the manuscript only)	1) What is the concept of “relatively uncomplicated molecular force field.”? 2) No data supported the conclusion of “This work can further be extended to estimate the cost and be applied to aid plant’s fabrication of any two-phase vapor liquid equilibrium process.”	1) The concept is based on the conditions or laws that validate flash calculation based on ideal condition(that is Raoult’s law, Dalton’s law and Henry’s law) 2) The major data needed are the compositions, flow rates, flash temperature and pressure, pre-heat temperature, specific heat capacities and heat of vaporizations, and the procedures or theories for obtaining all these parameters have been put forward
References	Some of the references cited are not found in the whole text.	Every reference cited is found in the research book but the book has just been summarised to produce this article