جامعة صالح بوبنيدر قسنطينة 3
UNIVERSITE SALAH BOUBNIDER CONSTANTINE 3

ISSN 2572-018X

AJER

ALGERIAN JOURNAL OF ENGINEERING RESEARCH

AJER Vol 6(1), 2022

EDITORIAL

The present AJER-6.1 issue presents six retained papers from process engineering topics.

The first paper concerns the production of clean energy from agri-food residues via the production and purification of hydrated bioethanol obtained after an alcoholic fermentation of expired orange juice supplied by a local cannery. Comparisons of blends of bioethanol-gasoline with common fuel have been performed through usual parameters like density, octane number, sulfur content, flash point, etc (*ElBey et al.*).

In the second paper two solvents, Toluene and n-Hexane, were compared for the extraction of Methanol from aqueous solutions. The 'cloud-point' titration method and refractometry to obtain the conjugate points on the tie-lines by correlating the refractive index in terms of composition were used for the binodal curve determination. The two solvents were assessed with respect to the distribution coefficient and the selectivity factor. Toluene was more selective *(Larous et al)*

The third paper considers the search for refrigerants substitutes for absorption heat pumps, due to the banning out of Chlorofluorocarbons (CFC) and hydro chlorofluorocarbon (HCFC) to protect the environment. Friendly compounds have been tested with 1,1,1,2-tetrafluoroethane(R134a)/NN, Dimethylacetamide (DMA) et R134a/N-methyl-2 pyrrolidone (NMP), as model working pairs. Group contribution methods were used to calculate the coefficient of performance (COP *(Zehioua et al)*.

The next paper deals with the use of an advanced oxidation Process to eliminate recalcitrant organic pollutants from industrial wastewaters effluents. Organic dye are such compounds, focusing on the photocatalytic degradation of a dye, namely basic yellow 28 in Suntest CPS+., testing three photocatalyst (TiO_2, ZnO and Fe_2O_3) and investigating the effects of different parameters like the quantity of catalysts, the initial concentration of Basic yellow 28 dye in aqueous suspensions of photocatalyst, the basic pH range, the temperature and the radiation intensity. The photocatalytic process was assessed through the determination of the total organic carbon (T*OC*) *(Bekkouche et al)*.

The fifth paper deals with the use of powdered eggshell to adsorb Asc from aqueous solution. The main objective is to study the adsorption properties of PDEs, particularly with respect to adsorption kinetics models and the effects of factors like pH, particle size, mass adsorbent, and initial Asc concentrations on the adsorption process. The results showed that PDEs can adsorb arsenic ions and the presence of metallic ions (Fe, Al and Ca) aided arsenic removal. Mass of adsorbent, pH, particle size, and initial Asc concentration are substantial factors that impacted the adsorption kinetic of Asc onto PDEs *(Babajide et al.).*

The last paper considered the determination of NRTL binary interaction parameters using data of ternary and quaternary systems like Water as diluent, Ethanol as the solute and Dichloromethane, Chloroform and Diethyl ether as solvents, considered individually or as binary mixtures. An objective function was defined either in terms of activities or mole fractions and was minimized using the Particle Swarm Optimization (PSO) technique. The results were compared with the experimental values and showed that the nature of the objective function did influence the accuracy *(Hebboul et al.)*.

The Chief Editor would like to thank Mr Aissa Lamri Zeggar for his permanent contribution and sustained efforts to upgrade this journal.

Prof MENIAI Abdeslam-Hassen

Chief Editor

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ALGERIAN JOURNAL OF ENGINEERING RESEARCH

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