

**INFORMATION  
ON THE NEW CONTRIBUTIONS OF DOCTORAL THESIS**

Title: *Preparation and characterization of natural resources-based materials, aiming at converting flood water into drinking/potable water.*

Speciality: **Physical and Theoretical Chemistry**

Code No: **9 44 01 19**

PhD student: **Dang Thi To Nu**

Course: **4 (2016 - 2020)**

Advisors:

1. Advisor 1: **Assoc. Prof. Nguyen Phi Hung**
2. Advisor 2: **Assoc. Prof. Cao Van Hoang**

Training institution: **Quy Nhon University**

**NEW CONTRIBUTIONS OF THE THESIS**

- Successfully prepared two-dimensional- $\delta$ - $\text{MnO}_2$  nanomaterials by solid-phase calcination method from the precursors  $\text{KMnO}_4$  and  $(\text{NH}_4)_2\text{C}_2\text{O}_4$  at 550 °C.
- This is the first time in Viet Nam, researching the preparation of asymmetric ultrafiltration membrane from sugarcane bagasse source in Binh Dinh with DMSO-environmentally friendly solvent by the non-solvent induced phase separation. The molecular weight cut-off (MWCO) of prepared membranes is less than 200 kDa. As a result, the permeability of prepared membranes significantly elevated while maintaining high protein (bovine serum albumin) retention ( $R > 80\%$ ).
- The loose nanofiltration membrane (MWCO: 1632 Da) was successfully prepared via the surface modification of cellulose acetate ultrafiltration membrane by the co-deposition of polydopamine and nano- $\text{Ag/MnO}_2$  with  $\text{CuSO}_4/\text{H}_2\text{O}_2$  trigger. As a result, the fabricated nanofiltration membrane exhibits high heavy metals rejection, good antifouling ( $\text{FRR} > 94\%$ ), and ultimately inhibits *E.Coli* and *Coliforms*.

*Binh Dinh, June 7<sup>th</sup>, 2021*

**Supervisors**

**PhD Student**



**Assoc. Prof. Nguyen Phi Hung**

**Dang Thi To Nu**