MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
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INFORMATION
ON THE NEW CONTRIBUTIONS OF DOCTORAL THESIS

Title: ***Preparation of (C, N, S)-TiO_2 materials from Binh Dinh Ilmenite ore for the treatment of wastewater from shrimp farms***
Speciality: **Physical and Theoretical Chemistry** Code No.: **9 44 01 19**
PhD student: **Nguyen Thi Lan**
Course: **4 (2016 - 2020)**
Advisors:

1. Advisor 1: **Assoc. Prof. Nguyen Phi Hung;**
2. Advisor 2: **Dr. Le Thi Thanh Thuy**

Training institution: **Quy Nhon University**

NEW CONTRIBUTIONS OF THE THESIS

1. This is the first time in Vietnam, researching the simultaneous doping of elements C, N, S into TiO_2 nanomaterials prepared from Ilmenite source in Binh Dinh by the sulfate method combined with the hydrothermal method, exploited the doping feature at the same time of three non-metallic elements in enhancing photocatalytic activity of TiO_2 nanomaterials.

2. Researching conditions for tetracycline (TC) antibiotic degradation reaction using TiO_2-C, N, S (2TH-TiO_2-500) catalyst. The results showed that synthetic materials have a strong ability to absorb visible light and give higher photocatalytic efficiency compared to TiO_2 materials due to limited fast recombination of electrons - photoelectric holes and narrow band gap energy. We proposed a kinetic Langmuir-Hinshelwood model of tetracycline antibiotic degradation over this 2TH-TiO_2 heterogeneous catalyst. After 120 min reaction by visible light 60W, the TC decolorization fraction reaches 96% and high correlation coefficient (r) of 0.98 - 0,99.

3. This is the first time in Vietnam, using TiO_2 materials, concurrently doped with three elements C, N, S, applied in shrimp farming wastewater treatment in the Central Coast of Vietnam by photocatalytic method combined with biological methods.

Binh Dinh, September 28, 2020

Advisors **PhD Student**

Assoc. Prof. Dr. Nguyen Phi Hung **Dr. Le Thi Thanh Thuy** **Nguyen Thi Lan**