

INFORMATION ON DOCTORAL THESIS

1. Full name: **Vu Dinh Ngo**

2. Sex: Male

3. Date of birth: 28/8/1966

4. Place of birth: Vinh Phuc

5. Admission decision number: 150/SĐH, Dated: 06/7/2005, Vietnam National University, Ha Noi.

6. Changes in academic process: 1129/SĐH Decision, Dated 20/06/2008 from the University of Natural Sciences - Vietnam National University, Ha Noi has allowed 12 months to renew on 06/7/2009; 2788/QĐ-SĐH Decision, Dated 12/8/2009 from Vietnam National University, Ha Noi has been suspended for studying reasons, work on 01/7/2010; Document No 66/DT-TS, Dated 30/07/2010 has allowed further study programs.

7. Official thesis title: Synthesis, structure and study the properties of cobalt ferrite and nickel ferrite nano particles

8. Major: Chemistry of Inorganic

9. Code: 62.44.25.01

10. Supervisors:

- Asso.Prof. Dr. Ngo Sy Luong

- Prof. Dr. Phan Van Tuong

11. Summary of the new findings of the thesis

- Successfully synthesizing the nano ferrite: CoFe_2O_4 and NiFe_2O_4 , single phase crystal structure spinel with the average particle size of 13-18 nm, with good magnetism, a characteristic of single domain. The ferrite nano can be applied to magnetic liquid production and some other products used in modern technology.

- Making a systematic survey of factors affecting the experimental process and the size of ferrite nanoparticles, such as pH, metal cation concentration, temperature and stirring duration, the amount of used solvent, the calcination temperature, calcination duration ... Finding the optimal conditions for the process of materials synthesis.

- The nanocomposite $\text{CoFe}_2\text{O}_4/\text{SiO}_2$ and $\text{NiFe}_2\text{O}_4/\text{SiO}_2$ was synthesized by the with the nanoparticles CoFe_2O_4 and NiFe_2O_4 (10-13 nm) dispersed in the amorphous SiO_2 , making a survey of factors affecting the experimental process and the nanocomposite characteristics: pH, the

calcination temperature, calcination duration, the proportion of crystalline phase in the nanocomposite, from which the processes of synthesizing materials is produced.

- The relationship between crystal structure, the size of particles nano ferrite CoFe_2O_4 and NiFe_2O_4 and their magnetic characteristics was identified, and the relation between crystal size, the content of crystal phase nano ferrite with special magnetism of the nanocomposite: $\text{CoFe}_2\text{O}_4/\text{SiO}_2$ and $\text{NiFe}_2\text{O}_4/\text{SiO}_2$ was determined as well.

12. Paratical applicability, if any:

- Application of powder synthesis process nano ferrite CoFe_2O_4 , NiFe_2O_4 and nanocomposite $\text{CoFe}_2\text{O}_4/\text{SiO}_2$, $\text{NiFe}_2\text{O}_4/\text{SiO}_2$ in practice.

- Using nano ferrite powder to produce magnetic liquid and catalyts...

13. Further research directions, if any

- Preparation magnetic liquid, the catalytic material handling enviromental, gas sensor.

14. Thesis-related publications:

[1]. Ngo Sy luong, Vu Dinh Ngo (2008), "Hydrothermal synthesis of nanosized nikel ferrite powder with the spinel structure", *Journal of Chemistry* 46(2A), pp. 182- 187.

[2]. Vu Dinh Ngo, Ngo Sy Luong (2008), "Synthesis nanoparticles of nikel ferrite by coprecipitation method and study on structure and magnetic properties", *Journal of Chemistry* 46(2A), pp. 206 - 211.

[3]. Vu Dinh Ngo, Ngo Sy Luong (2008), "Synthesis nanoparticles nanoparticles of cobalt ferrite by coprecipitation method and study on structure and magnetic properties", *Journal of Chemistry* 46(2A), pp. 212 - 218.

[4]. Vu Dinh Ngo, Ngo Sy Luong, Phan Van Tuong (2009), "Preparation of nanosized cobalt ferrite on SiO_2 matrix by sol- gel method, study their structure and magnetic", *Journal of Analysis Chemistry, Physics and Biology* 14(1), pp.8- 11.

[5]. Ngo Sy Luong, Phan Van Tuong, Vu Dinh Ngo (2009), "Hydrothermal synthesis of nanosized spinel cobalt ferrite powder", *Journal of Analysis Chemistry, Physics and Biology* 15(4), pp. 293- 296.

[6]. Ngo Sy Luong, Phan Van Tuong, Vu Dinh Ngo (2011), "Synthesis of $\text{NiFe}_2\text{O}_4/\text{SiO}_2$ nanocomposite by sol - gel method, study on structure and magnetic properties", *Journal of Analysis Chemistry, Physics and Biology* 16(2), pp. 55 - 59.