

Curriculum Vitae

Dr. Divya S. Nair

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EDUCATION

Doctor of Philosophy (Ph.D) , Chemistry, M G University, Kottayam, Kerala, India.	2011 - 2017
Bachelor of Education (B.Ed.) , Physical Science, M G University, Kottayam, Kerala, India.	2009 - 2010
Master of Science (M.Sc.) , Chemistry, M G University, Kottayam, Kerala, India.	2007 - 2009
Bachelor of Science (B.Sc.) , Chemistry, M G University, Kottayam, Kerala, India.	2004 - 2007

DETAILS OF PH.D. WORK UNDERTAKEN

Centre of Research : M G University Research Centre, M. A. College, Kothamangalam

Title of Ph.D. Thesis: "Catalytic applications of transition metal doped spinel nanoferrites"

RESEARCH EXPERIENCE

- 2011 - 2017; Research experience in the field of Nanomaterials and Nanocatalysis as UGC JRF and SRF at M. G. University Research Centre in Chemistry, Mar Athanasius College (Autonomous), Kothamangalam, Kerala, PIN-686 666.
- April 2008 to May 2008; Project Fellow in the Quality Assurance Department of FACT, Udyogamandal, Kochi.

DETAILS OF PATENT

- A patent entitled '**PROCESS FOR DETOXIFICATION OF ORGANIC POLLUTANTS BY WET PEROXIDE OXIDATION USING CHROMIUM NANOFERRITE CATALYSTS**' filed at Indian Patent Office in June 2016- Application number- **201641020739**.

PUBLICATIONS

1. Divya S. Nair, Manju Kurian, Highly selective synthesis of diphenyl methane via liquid phase benzylation of benzene over cobalt doped zinc nanoferrite catalysts at mild conditions- **Journal of Saudi Chemical Society** (Accepted - 2019).
2. Divya S. Nair, Manju Kurian, Chromium-zinc ferrite nanocomposites for the catalytic abatement of toxic environmental pollutants under ambient conditions, **Journal of Hazardous Materials** 344 (2018) 925-941.
3. Divya S. Nair, Manju Kurian, Heterogeneous catalytic oxidation of persistent chlorinated organics over cobalt substituted zinc ferrite nanoparticles at mild conditions: Reaction kinetics and catalyst reusability studies, **Journal of Environmental Chemical Engineering**, 5 (2017) 964-974.
4. Divya S. Nair, Manju Kurian, Catalytic peroxide oxidation of persistent chlorinated organics over nickel-zinc ferrite Nanocomposites, **Journal of Water Process Engineering**, 16 (2017) 69-80.
5. Divya S. Nair, Manju Kurian, Influence of synthesis conditions on the surface properties of cobalt copper nanoferrites, **Journal of the Australian Ceramic Society** (2017).
6. Divya S. Nair, Manju Kurian, Effect of Preparation Conditions on Nickel Zinc Ferrite Nanoparticles: A Comparison between Sol-Gel Auto Combustion and Co-Precipitation Methods, **Journal of Saudi Chemical Society** 20 (2016) 517-522.
7. Divya S. Nair, Manju Kurian, Heterogeneous Fenton behavior of nano nickel zinc ferrite catalysts in the degradation of 4-chlorophenol from water under neutral conditions. **Journal of Water Process Engineering**, 8 (2015) 37-49.
8. Divya S. Nair, Manju Kurian, Manganese zinc ferrite nanoparticles as efficient catalysts for wet peroxide oxidation of organic aqueous wastes, **Journal of Chemical Sciences**, 3 (2015) 537-546.

9. Structural, magnetic, and acidic properties of cobalt ferrite nanoparticles synthesized by wet chemical methods, *Journal of Advanced Ceramics*, 4 (2015) 1-7.
10. Divya S. Nair, Manju Kurian, On the efficiency of cobalt zinc ferrite nanoparticles for catalytic wet peroxide oxidation of 4-chlorophenol, *Journal of Environmental Chemical Engineering*, 2 (2014) 63-69.
11. Divya S. Nair, Manju Kurian, Influence of the synthesis conditions on the catalytic efficiency of NiFe₂O₄ and ZnFe₂O₄ nanoparticles towards the wet peroxide oxidation of 4-chlorophenol, *Reaction Kinetics, Mechanisms and Catalysis* 111 (2014) 591-604.
12. Effect of rare earth doping on structural, magnetic, electrical properties of magnesium ferrite and its potential use in waste water treatment, *International Journal of Engineering Science and Innovative Technology*, 3 (2014) 529-537.
13. Divya S. Nair, Manju Kurian, Synthesis and Characterization of Nickel Zinc Ferrite, *American Institute of Physics Conf. Proc.* 1391(2011) 594.
14. A review on catalytic wet peroxide oxidation for the detoxification of organic aqueous waste, *International Journal of Creative Research Thoughts* 6 (2018) 25-30.
15. Modified Fenton's process for the removal of Congo red dye from water - Divya S. Nair, *Accepted in International Journal of Creative Research Thoughts* (2017).
16. Divya S. Nair, Manju Kurian, Chromium doped zinc nanoferrites as highly selective catalysts for Friedel-Crafts benzylation: A conclusive study on reaction kinetics and activation energy changes – (Accepted in the *Journal of Nanostructure in Chemistry-2018*).
17. Divya S. Nair, Manju Kurian, Activity of nickel doped zinc nanoferrite catalysts in the kinetics and activation energy changes of Friedel-Crafts benzylation of benzene at lenient conditions - (Communicated to *Chemical Engineering Journal-2019*).
18. Divya S. Nair, Manju Kurian, Treatment of Organic Aqueous Wastes: Cobalt and nickel ferrite nanoparticles as efficient catalysts for the complete degradation of 4-chlorophenol, *Proceedings of 26th Kerala Science Congress*, 2014.

19. Divya S. Nair, Manju Kurian, Degradation and detoxification of the herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) by wet peroxide oxidation process using nano cobalt ferrite catalyst, **Proceedings of 28th Kerala Science Congress**, 2016.

RECOGNITION/AWARD/PRIZE/ FELLOWSHIPS RECEIVED

SL. No.	Name of Award	Awarding Agency	Year
1	Merit Scholarship for PG	MG University	2007-2009
2	UGC- JRF	UGC, New Delhi	2014-2016
3	UGC- SRF	UGC, New Delhi	2016- 2018

TEACHING EXPERIENCE

Sl. No.	Positions held	Name of the Institute	From	To
1	Guest Lecturer	Mar Athanasius College Kothamangalam	2015 Oct	2016 March
2	Assistant Professor	Muthoot Insitute of Technology and Science	2017 Feb	2018 Jan
3	Assistant Professor	Kerala Agricultural University Malappuram	2018 Feb	2018 Aug

PROJECT GUIDANCE

- Co-supervised four postgraduate students in the synthesis, characterization and catalytic applications of nanoparticles.
- Co-supervised six graduate students in the synthesis and characterization of nanoparticles.
- Supervised four B. Tech. students in the synthesis, characterization and catalytic applications of Metal oxide nanoparticles.

AREA OF RESEARCH INTEREST

Material synthesis (Nanomaterials and nanocomposites)

Nano-catalysis and Environmental remediation (Waste water treatment)

Organic synthesis

PROFESSIONAL SKILLS

Experienced in handling

Gas Chromatograph, BET surface area analyzer, Total Organic Carbon analyzer, Temperature Programmed Reduction -H₂ Reactor, Temperature Programmed Reduction -NH₃/CO₂ Chemisorption Reactor, Vapor Phase Reactor, Pressure Reactor, Liquid Phase Reactor, High Performance Liquid Chromatography (HPLC), Atomic Absorption Spectrophotometer (AAS), X-Ray Diffractometer (XRD), UV-Visible spectrophotometer, Digital pH Meter, Colorimeter, Water Deionizer.

DETAILS OF PROJECTS COMPLETED SO FAR

- Development of substituted chromium spinels for the catalytic abatement of toxic environmental pollutants from water under ambient conditions – Short listed under Student Project Scheme of Gandhian Young Technological Innovation (GYTI) Awards 2018.
- Modified Fenton's process for the removal of congo red dye from water under mild reaction conditions - Short listed under Student Project Scheme of Gandhian Young Technological Innovation (GYTI) Awards 2018.

Research papers presented in International/ National/ Science congress/ Workshops attended

1. Divya S. Nair, Manju Kurian, "Synthesis and Characterization of Nickel Zinc Ferrite" International Conference on Optical Nanomaterials (Optics'11) held at NIT, Calicut on May 23-27, 2011.

2. Divya S. Nair, Manju Kurian, "Synthesis and Structural Characterization of Nanoscale Nickel Zinc Ferrite" International Conference on Nanomaterials (COCHIN nano'11) held at CUSAT, Kochi on August 14-17, 2011.
3. Attended a two day work shop on Instrumentation organized by SAIF, CUSAT as a part of an International Conference on Nanomaterials (COCHIN nano'11) held at CUSAT, Kochi on August 14-17, 2011.
4. Divya S. Nair, Manju Kurian, "Characterization of $\text{Co}_{1-x}\text{Zn}_x\text{Fe}_2\text{O}_4$ nanoparticles produced by sol-gel auto combustion method" International Conference on Material Science and Technology (ICMST-2012) held at St. Thomas College, Pala on 10 - 14 June 2012.
5. Divya S. Nair, Manju Kurian, "Influence of preparation conditions in the properties of NiFe_2O_4 and ZnFe_2O_4 nanoparticles" National Conference on Recent Advances in Spectroscopy: A Chemical and Biological Perspective held at Newman College, Thodupuzha on February 28- March 2, 2013.
6. Divya S. Nair, Manju Kurian, "Catalytic wet peroxide oxidation for the degradation of 4-chlorophenol from water using Co-Zn ferrite nanoparticles", UGC sponsored National Conference on Natural Resources Management: A Key to Sustainability held at Assumption College, Changanacherry on 5-6 December 2013.
7. Divya S. Nair, Manju Kurian, "Synthesis and structural characterization of Zinc doped Manganese ferrite nanoparticles" International Research Conference on Advanced Techniques in Chemistry IRCATC-2014 held at St. Albert's College, Ernakulam on 9th January 2014.
8. Divya S. Nair, Manju Kurian, "Catalytic wet peroxide oxidation of water containing 4-chlorophenol over Ni-Zn ferrite nanoparticles at mild conditions" National Conference on Current Trends in Chemistry (CTriC-2014), held at CUSAT, Kochi on January 17-18, 2014.
9. Divya S. Nair, Manju Kurian, "Treatment of Organic Aqueous Wastes: Cobalt and Nickel ferrite nanoparticles as effective catalysts for the complete degradation

of 4-chlorophenol” short listed under ‘Best Paper Award’ Category in the 26th Kerala Science Congress-2014, held at Wayanad on 28-31 January 2014.

10. Divya S. Nair, Manju Kurian, “Influence of preparation conditions and calcination temperature on the structural, electrical and magnetic properties of cobalt ferrite nanoparticles” National Conference on Recent Advances in Spectroscopy held at M. A College, Kothamangalam, on 31 July and 1 August, 2014.
11. Divya S. Nair, Manju Kurian, “Kinetics of catalytic wet peroxide oxidation of 2,4-dichlorophenol over cobalt and nickel doped zinc ferrite nanomaterial at mild conditions” Advanced Functional Materials held at M. A College, Kothamangalam, on 15-16 September, 2015.
12. Divya S. Nair, Manju Kurian, “Degradation and detoxification of the herbicide 2,4-dichlorophenoxyacetic acid (2,4-D) by wet peroxide oxidation process using nano cobalt ferrite catalyst” Proceedings of 28th Kerala Science Congress-2016.
13. Divya S. Nair, Manju Kurian, “Synthesis, characterization and benzylation activity of nanocrystalline Cobalt-Zinc Ferrite composites” in Kerala Technological Congress (KETCON) held at MACE on 13-14 January 2017.
14. Divya S. Nair, Manju Kurian, “Heterogeneous catalytic oxidation for abatement of 2,4-D over cobalt doped zinc ferrite nanocomposites: Reaction mechanism and Catalyst reusability” in the National Conference on Current Trends in Chemistry (CTriC-2017), held at CUSAT, Kochi on February 03-04, 2017.
15. Attended a three day FDP of ICT, Trivandrum organized by ICT on May 12-14, 2018.

MEMBERSHIP IN PROFESSIONAL BODIES

1. Women Scientist Division – KSCSTE
2. Royal Chemical Society (Reaction Chemistry and Engineering)

COMPUTER SKILLS

- MS Office (MS Word, MS Excel, PowerPoint)
- Chems sketch and Chemdraw
- Origin
- Latex & Math LAB

PERSONAL INFORMATION

Date of Birth : 05/12/1986
Gender (M/F/T) : Female
Religion : Hinduism
Marital status : Married
Citizenship : Indian
Languages known : Malayalam (Mother tongue), English and Hindi

Permanent address

Peechattu House
Kozhippilly P. O.
Kothamangalam
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