

Supervisor's opinion on the PhD. thesis

“Preparation and characterization of advanced spinel ferrite nanocomposites for electromagnetic applications”

written by

Anju

submitted to the

Tomas Bata University in Zlín

Anju, M.Sc. pursued a Ph.D. in 'Nanotechnology and Advanced Materials' at Tomas Bata University in Zlín, Czech Republic. Throughout her studies, she performed all tasks related to the study plan and successfully passed the state doctoral examination in 2023. Her dissertation work is focused on the preparation and characterization of advanced spinel ferrite nanoparticles based polymer nanocomposites for electromagnetic interference shielding applications. Moreover, she investigated sonochemical synthesis methods of spinel ferrite nanoparticles with the aim of obtaining reasonable small nanosized particles. Further, developed spinel ferrite nanoparticles and reduced graphene oxide or graphite were used as fillers to develop advanced polymer nanocomposites for electromagnetic interference shielding application. The core of the dissertation was embodied in three publications in impacted journals, where Anju contributed as the first and main author. The first paper on polymer nanocomposites with Zn²⁺ doped cobalt ferrite nanoparticles and reduced graphene oxide, is in *ACS Omega*, the second paper on Cu²⁺ doped cobalt ferrite nanoparticles based polymer nanocomposites with reduced graphene oxide, in *International Journal Molecular Sciences*, and the third one is based on optimization of cobalt ferrite nanoparticles and graphite fillers to endow thermoplastic polyurethane nanocomposites with superior electromagnetic interference shielding performance, in *Nanoscale Advances*. Anju is also co-author of three other manuscripts that are indexed on WoS in addition to these three papers from CPS.

Anju actively presented her findings at a number of international conferences, and she contributed one full-text article to proceedings that were WoS-indexed. In 2023, Anju also worked with Prof. Ermelinda Macoas for three months at University of Lisbon, in Portugal.

As previously stated, the dissertation thesis is based on three published original full-length articles published in impacted journal. All of the journals are relevant to the field of research and are impacted and indexed by Thomson Reuters ISI Web of Science. Anju is the first author of all the papers, and her contribution to these publications was the most significant. Therefore, the body of the Thesis consists of parts potentially indicated by similarity analysis in anti-plagiarism text-checking systems. It must be emphasized that all these scores account for the three papers with Anju's works and results. All these paragraphs are appropriately cited. The three papers are auto-referred by [A X] codes, where X stands for the main paper numbers 1 or 2, to simplify the reading of the Thesis. Moreover, the study regulation requires that substantial parts of the Thesis be published, making matching the Thesis with the published works inevitable.

In summary, Anju has shown the requisite devotion, knowledge, and effort during her study at the TBU in Zlín to successfully complete the researched PhD program. In light of these facts, I believe that the submitted dissertation work is well-conceived, and I suggest that it be defended, after which Anju will be awarded the Doctor of Philosophy (Ph.D.) degree.

Zlín 20th May 2024

M.Sc. Raghvendra Singh Yadav, Ph.D.

Supervisor