25.06.2024

Review

of the foreign scientific consultant, PhD, associated -professor Florence Vacandio for the thesis of Ms. Bakhytzhan Yeldana titled «Synthesis of chemisorption and nanocomposite polymer coatings on steel with high anticorrosive properties» submitted for the degree of Doctor of Philosophy (PhD) in the speciality – 6D060600 «Chemistry»

Corrosion studies is highly significant in the global context due to the pervasive nature of corrosion and its impact on various industries. Corrosion, the gradual degradation of materials by chemical reactions with their environment, poses a substantial challenge to the longevity and reliability of infrastructure, machinery, and equipment. Corrosion studies are vital for economic sustainability, safety, resource conservation, technological progress, and environmental protection. The development of new materials and coatings, like the nanocomposite polymer coatings discussed in the dissertation, represents a proactive approach to tackling these challenges head-on.

The dissertation of Yeldana Bakhytzhan presents a comprehensive study on the electropolymerization of nanocomposite polymer and synthesis of chemosorption coatings aimed at enhancing the anticorrosive properties of steel. The literature review is thorough, encapsulating a range of relevant studies and setting a solid foundation for the research.

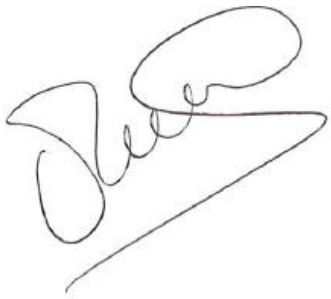
The methodology is well-defined, with clear protocols for the synthesis of nanocomposite polymers and their application on steel substrates. The experimental setup is robust, allowing for an in-depth analysis of the coatings' performance. The results are articulated with precision, supported by empirical data. The use of graphical representations aids in the interpretation of the findings, which indicate a significant improvement in corrosion resistance. The discussion offers a critical evaluation of the results, effectively bridging the gap between the research and potential industrial applications. The comparison with existing technologies underscores the advancements made by this study.

The dissertation concludes on a strong note, highlighting the successful development of anticorrosive coatings that could have substantial industrial implications. Recommendations for future work are insightful, paving the way for continued research in this domain.

The results of the work have been presented in 13 publications: 2 publications in journals included in the Scopus database, 4 publications approved by the Committee for Quality Assurance in the Sphere of Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan and 7 abstracts of reports at international and national symposiums and conferences.

In accordance with the foregoing, I believe that the dissertation work of Yeldana Bakhytzhan meets the requirements for PhD thesis in terms of volume of research performed, its scientific and practical importance and can be recommended for defense in the specialty 6D060600 – Chemistry.

Dr. Florence Vacandio



Laboratoire MADIREL - UMR 7246
Université d'Aix-Marseille - CNRS
Bâtiment MADIREL - Campus Etoile
Av. Escadrille Normandie-Niemen
13397 MARSEILLE CEDEX 20
Tél. : (33) 4.13.55.18.01/02/03 - Fax : (33) 4.13.55.18.50

Dr. Florence Vacandio
MADIREL Laboratory (UMR 7246)
Aix-Marseille University
Campus de Saint Jérôme -13397 Marseille Cedex 20 (France)
+33 (0)4 13 55 18 37 : +33 (0)4 13 55 18 50
florence.vacandio@univ-amu.fr