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Oxidative aromatization of some 1,4-dihydropyridine derivatives using pyritic ash in eco-sustainable conditions

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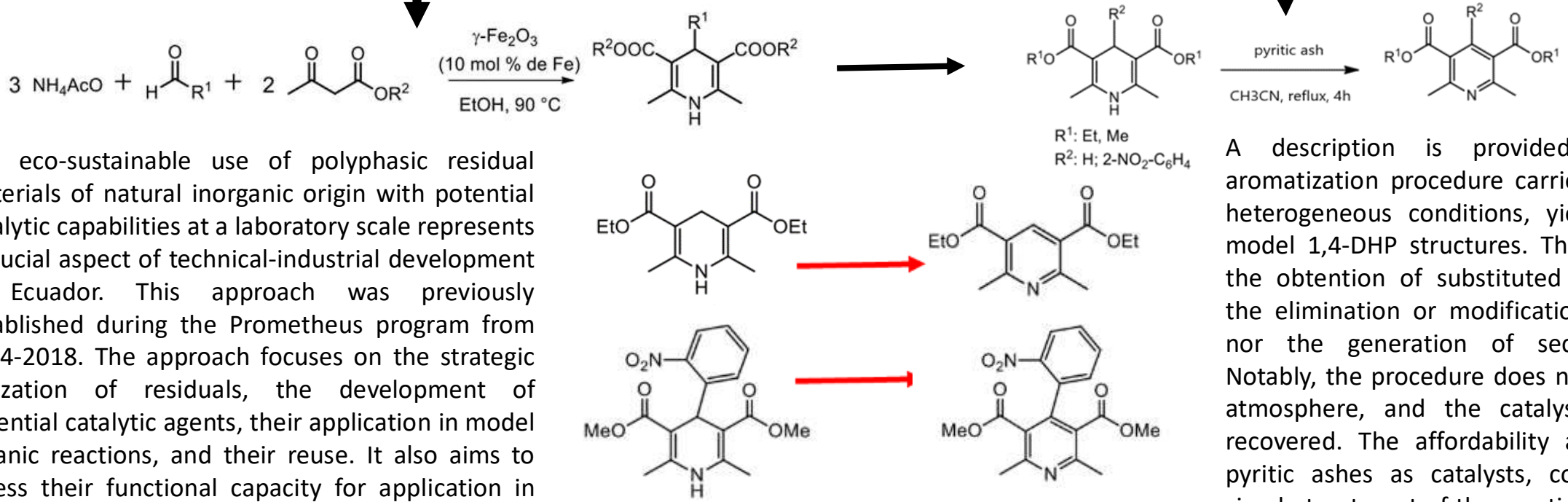
GREEN CHEMISTRY & STRATEGIC UTILIZATION OF INORGANIC RESIDUAL

NP-MAGHEMITE (γ-Fe_2O_3)

PYRITIC ASHES



The eco-sustainable use of polyphasic residual materials of natural inorganic origin with potential catalytic capabilities at a laboratory scale represents a crucial aspect of technical-industrial development in Ecuador. This approach was previously established during the Prometheus program from 2014-2018. The approach focuses on the strategic utilization of residuals, the development of potential catalytic agents, their application in model organic reactions, and their reuse. It also aims to assess their functional capacity for application in various processes, minimizing environmental impact while maximizing atomic efficiency. Additionally, the Prometheus approach explored the potential for structural modifications at all scales of the industrial residuals. Pyritic ashes are a central subject of this conceptual framework

A description is provided for a simple aromatization procedure carried out under mild heterogeneous conditions, yielding 70-90% for model 1,4-DHP structures. This process enables the obtention of substituted pyridines without the elimination or modification of substituents, nor the generation of secondary products. Notably, the procedure does not require an inert atmosphere, and the catalysts can be easily recovered. The affordability and availability of pyritic ashes as catalysts, combined with the simple treatment of the reaction mixture and the satisfactory yields, render this methodology an attractive and eco-sustainable option, and could be an interesting addition to existing synthetic protocols.

Work References

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