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(57) Abstract :
[036] The present invention relates to a green and sustainable method for the synthesis of 2-amino-3,5-dicarbonitrile-6-arylthio-pyridine derivatives using a novel, reusable glass-ceramic heterogeneous catalyst in water medium. The catalyst is prepared via a melt-quenching and controlled crystallization process involving metal and non-metallic oxides. This glass-ceramic material exhibits both Lewis acidic and basic properties, enabling efficient catalysis of a one-pot, three-component reaction involving 4-methoxybenzaldehyde, 4-bromothiophenol, and malononitrile. The process achieves a high product yield (>90%) at 100°C and eliminates the need for hazardous solvents or expensive reagents. The catalyst can be reused for multiple cycles without significant loss of activity, offering a cost-effective and eco-friendly alternative for the synthesis of bioactive pyridine derivatives with potential pharmaceutical applications. Accompanied Drawing [FIGS. 1-2]

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