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Development of organocatalyst-loaded electrospun nanofibers to improve heterogeneous catalysis

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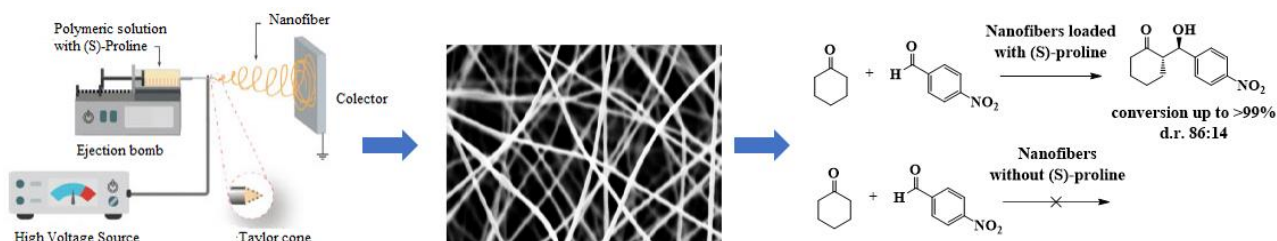
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ABSTRACT

In recent years, the development of heterogeneous catalysts has been gaining prominence in the field of organocatalysis, due to the limitations of homogeneous catalysis, such as challenges in separation and recycling.¹ Thus, heterogeneous catalysis on solid supports emerges as an alternative. In this sense, electrospinning is a simple and versatile process used to fabricate polymeric nanofibers with high surface area that can be used as solid support in heterogeneous catalysis.² Therefore, the objective of this work was to develop a nano-organocatalyst from the electrospinning of a PVA and PVP nanofiber loaded with (S)-proline (**Scheme 1**).

Scheme 1.



The nano-organocatalyst was successfully prepared and its efficiency was verified against the asymmetric aldol reaction between cyclohexanone and p-nitrobenzaldehyde was evaluated.³ The conversion observed for the reaction was >99% after 11 h, with an increase in diastereoselectivity (86:14) when compared to homogeneous organocatalyst (76:24). At the end of the reaction, the nano-organocatalyst was recovered by simple filtration.

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