Textile recycling processes, state of the art and current developments

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World fibre production has been rising continuously over last decades and a tremendous increase is expected in the near future. The major portion of fibres goes to the textile industry whose main output streams are apparel and home textiles. With the transformation of these textile products from a basic human need to fashion items, their lifetime before disposal is steadily declining, while at the same time the complexity of their material composition is increasing. As a matter of fact, the amount of disposed items is increasing distinctively and the issue of a proper handling of end-of-life textiles is becoming more important. The objective of this mini review is, first to give a brief overview of the already available textile recycling methods, and subsequently it will discuss innovative developments of new recycling processes in the textile recycling sector. A special focus of this review lies on the emerging field of biochemical fibre recycling processes, which could become a major step on the way to a circular economy in the textile processing chain. Owing to the high selectivity of bio-catalysts, enzymes, these processes could be used to remove a specific fibre material from multi-component textiles. As the complexity of textiles is reduced, the recyclability is increased.

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