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Current and future impact of 3D printing on the separation sciences

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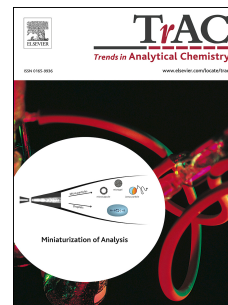
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1 **Current and future impact of 3D printing on the separation sciences**

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10 **Abstract**

11 The potential of 3D printing to transform the field of separation science is becoming clear, based
12 upon an increasing capacity to create highly customised devices, materials and structures, with
13 complex geometries. The constantly improving print resolution and increasing variety of available
14 print materials, including functional and composite materials, mean devices can be printed today,
15 which would be extremely challenging to achieve using traditional manufacturing techniques. This
16 review covers the majority of 3D printed devices to-date designed for use within the separation
17 sciences, categorised under application within pre-separation, separation, and post-separation
18 stages of analysis. It describes the impact 3D printing is having on the field, both current and future,
19 recent achievements and challenges, and improvements required to reach its maximum potential as
20 a transformative technology.

21 **Key words**

22 3D printing; separation science; chromatography; separation devices; analytical sciences.

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