

# Performance of a New Family of Modular, Bed-Supported, Chromatography Devices

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February 1, 2023

## Abstract

Pre-packed chromatography columns and cassette filtration units offer many advantages in bioprocessing. These include reduced labor costs and processing times, ease of storage, and enhanced process flexibility. Rectangular formats are particularly attractive as they can be stacked and multiplexed together for continuous processing. Cylindrical chromatography beds have historically been favored even though their bed support and pressure-flow performance vary with bed dimensions. This work presents the performance of rectangular chromatography devices with novel internally supported beds. They are compatible with existing chromatography workstations and can be packed with any standard commercial resin. The devices offer pressure-flow characteristics independent of container-volume, simple multiplexing, and separation performance comparable to cylindrical columns. Their internal bed support allows mechanically less-rigid resins to be used at up to 4 times higher maximal linear velocities, and productivities approaching 200 g/L/h for affinity resins, compared to the 20 g/L/h typical of many column-based devices. Three 5 L devices should allow processing of up to 3 kg of monoclonal antibody per hour.

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