

Benefits of process intensification with monoliths

Fewer steps reduce costs at all process stages: development, validation, manufacturing.

Fewer steps give higher product recovery with lower material consumption

Fewer steps mean less in process testing

Further improvements in overall process economy can be achieved with single-use.



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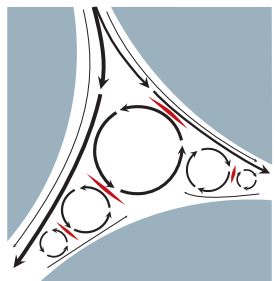
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PROCESS *intensification* WITH MONOLITHS

Beyond offering the fastest throughput, highest virus binding capacity, and lowest shear stress, monoliths enable process shortcuts that can simplify your virus purification challenges.

Traditional processing involves tangential flow filtration to concentrate and buffer exchange for product capture. It takes time and it imposes shear stresses that damage viruses. Chromatography with particle columns also imposes turbulent shear stress and it is slow.

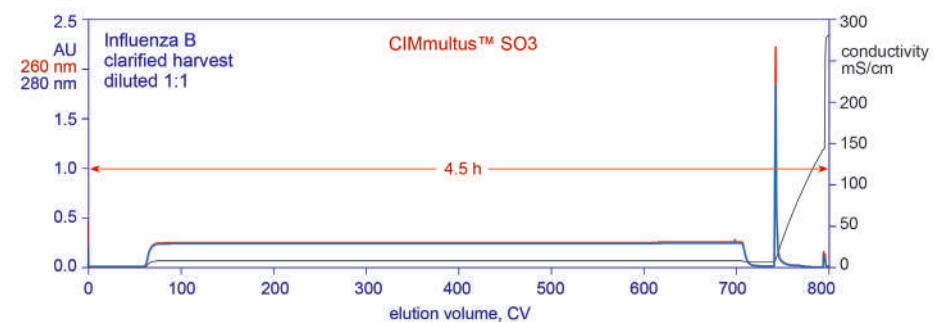


Flow through monoliths is 20–50 times faster than particle columns, and it is laminar. It does not impose turbulent shear. TFF can be replaced with dilution then loading directly to a monolith at high flow rate.

Graphic L: Turbulent shear stress is created in the void volume of porous particle columns by formation of eddies.

Graphic R: Laminar flow through monoliths does not create turbulent shear stress.

Direct capture of influenza virus from diluted harvest
Sample diluted 1:1 with cation exchange equilibration buffer. Flow rate 5 CV/min.
Total process time, equilibration > clean in place 3.5 h (get this number from Mojca)
84% infectious virus recovery, 99% host protein and DNA reduction



Ref: Sbaizero et al, Intensification of influenza virus purification: from clarified harvest to formulated product in a single shift, BioProcess International, In press.