

YMC-BioPro Ion Exchange Columns & Materials

YMC-BioPro is a family of ion exchange (IEX) materials and columns for analytical, micro-preparative, and preparative scale separations of proteins, peptides, nucleic acids, and other biomolecules. YMC-BioPro is based on a novel hydrophilic polymer bead which exhibits very low non-specific adsorption.

QA (strong anion exchange, SAX) and SP (strong cation exchange, SCX) chemistries are available in 5 µm monodispersed porous, as well as 3, 5, and 6 µm non-porous beads - optimally packed in biocompatible PEEK column housings. QA and SP chemistries are also available as bulk materials in 10, 30, and 75 µm porous polymer beads.

YMC-BioPro delivers excellent selectivity, resolution, reproducibility, and durability

Choose porous type (YMC-BioPro QA and SP) for higher capacity. Select non-porous type (YMC-BioPro QA-F and SP-F) for increasing resolution and speed of separation (increased sample throughput).



Porous polymer beads



Non-porous polymer beads

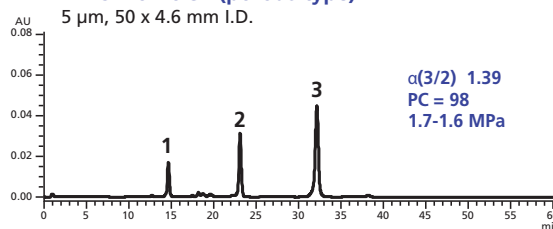


Protein Separations on YMC-BioPro Porous and Non-Porous Materials

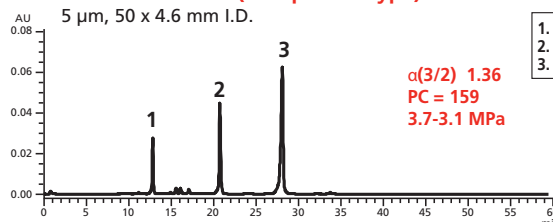
YMC-BioPro SP and **YMC-BioPro SP-F** are both strong cation exchange (SCX) materials with the same chemistry. The base material for BioPro SP is a porous polymer bead; BioPro SP-F is non-porous.

As asserted in the chromatograms here, both materials show similar selectivity for the separation of these proteins. The non-porous material exhibits improved peak sharpness and larger peak capacity and is somewhat less retentive. The porous material operates at lower backpressure.

YMC-BioPro SP (porous type)
5 µm, 50 x 4.6 mm I.D.



YMC-BioPro SP-F (non-porous type)
5 µm, 50 x 4.6 mm I.D.



1. Ribonuclease A
2. Cytochrome c
3. Lysozyme

Eluent:	A) 20 mM NaH ₂ PO ₄ -Na ₂ HPO ₄ (pH 6.8) B) 20 mM NaH ₂ PO ₄ -Na ₂ HPO ₄ (pH 6.8) containing 0.5 M NaCl
Flow rate:	0-100%B (0-60 min) 0.5 mL/min
Temperature:	25°C
Detection:	UV at 280 nm
Injection:	100 µL
Sample:	each 0.05 mg/mL

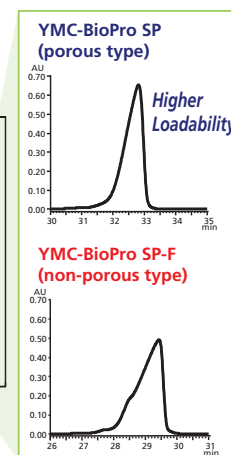
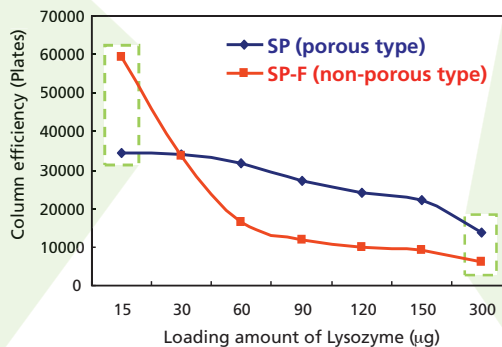
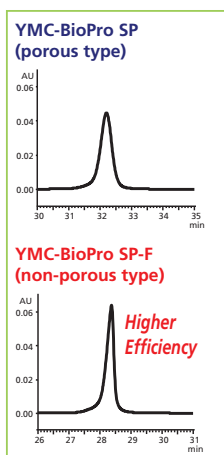
PC (peak capacity)=1 (gradient time / peak width*)
*peak width = 2W_{0.5h} average

Protein Loadability and Separation Efficiency on YMC-BioPro Porous and Non-Porous Materials

YMC-BioPro SP-F (non-porous type) offers outstanding column efficiency. YMC-BioPro SP-F columns are especially suitable for microscale analysis which requires higher resolution.

YMC-BioPro SP (porous type) maintains good peak shape even when the loading amount increases.

YMC-BioPro SP columns are useful for high-load analytical separations and laboratory-scale purification.



Eluent:	A) 20 mM NaH ₂ PO ₄ -Na ₂ HPO ₄ (pH 6.8) B) 20 mM NaH ₂ PO ₄ -Na ₂ HPO ₄ (pH 6.8) containing 0.5 M NaCl
Flow rate:	0-100%B (0-60 min) 0.5 mL/min
Temperature:	25°C
Detection:	UV at 280 nm
Injection:	100 µL

Shorter Analysis Times are Practical Using YMC-BioPro SP-F (non-porous type)

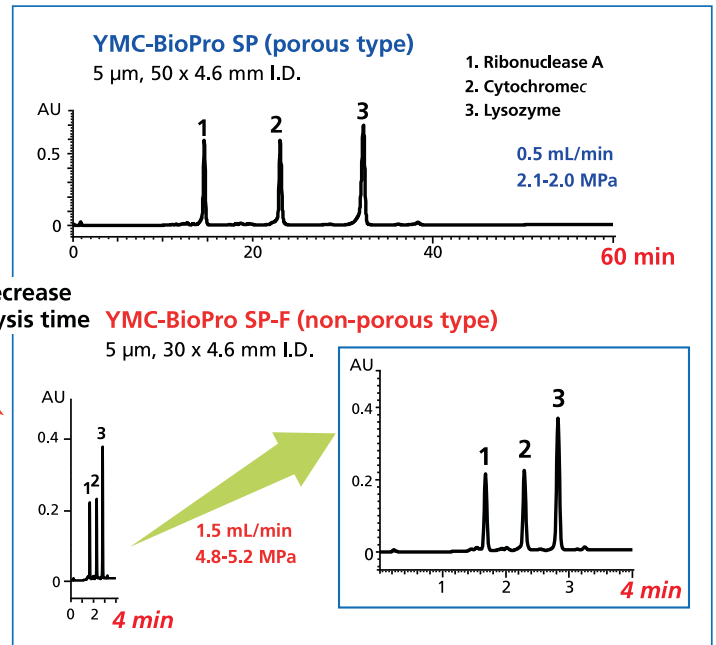
Non-porous polymer beads have advantages in mechanical stability over porous polymer beads. This enables reliable column operation at higher backpressure, as would occur when higher flow rates are used.

The high efficiency of YMC-BioPro SP-F allows the use of shorter column bed lengths with excellent separation results.

As seen in this example, analysis time can be dramatically reduced by using non-porous type YMC-BioPro SP-F columns of a shorter length operating at a higher flow rate.

Eluent:	A) 20 mM $\text{KH}_2\text{PO}_4\text{-K}_2\text{HPO}_4$ (pH 6.8) B) 20 mM $\text{KH}_2\text{PO}_4\text{-K}_2\text{HPO}_4$ (pH 6.8) containing 0.5 M NaCl
Temperature:	25°C
Detection:	UV at 220 nm
Injection:	20 μL
	0-100%B (0-4 min) for YMC-BioPro SP-F 0-100%B (0-60 min) for YMC-BioPro SP

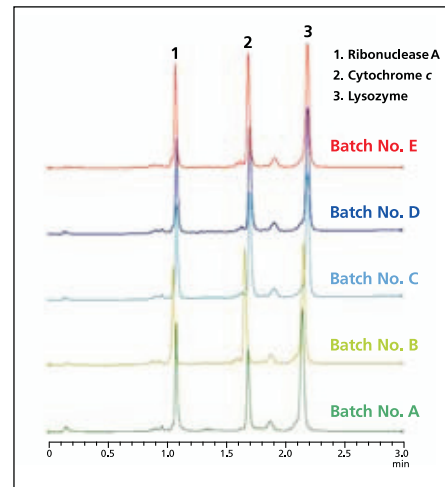
90% decrease
in analysis time



Excellent Batch-to-Batch Reproducibility

YMC's attention to the details of particle and stationary phase synthesis creates chromatography materials that offer outstanding reproducibility. Column-to-column and lot-to-lot reproducibility combine with low non-specific adsorption to produce YMC-BioPro columns and bulk media that offer consistent retention, separation, and recovery.

Column:	YMC-BioPro SP-F 30 x 4.6 mm I.D.
Eluent:	A) 20 mM $\text{NaH}_2\text{PO}_4\text{-Na}_2\text{HPO}_4$ (pH 6.8) B) 20 mM $\text{NaH}_2\text{PO}_4\text{-Na}_2\text{HPO}_4$ (pH 6.8) containing 0.5 M NaCl
Flow rate:	1.5 mL/min
Temperature:	25°C
Detection:	UV at 220 nm
Injection:	20 μL
	0-100%B (0-4 min)



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