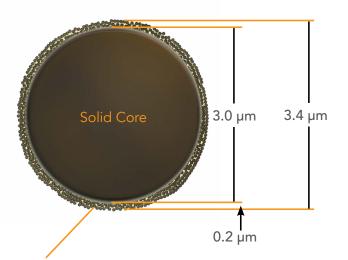
# PROTEIN

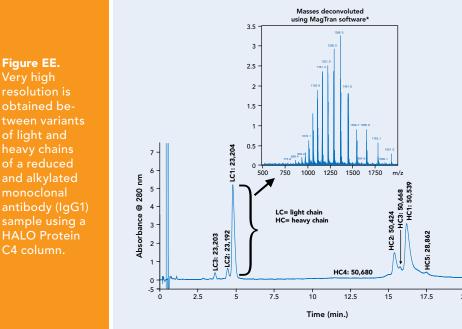
- + 400 Ångstrom pores to provide unrestricted pore access for polypeptides and proteins as large as 500 kDa
- + 3.4  $\mu$ m Fused-Core particles with a very thin 0.2  $\mu$ m outer porous shell
  - Provides narrower peaks and better recoveries for large biomolecules (vs. smaller pore sizes and non-core particles)
  - Allows HALO Protein columns to be used with both UHPLC and HPLC instrumentation for fast bioseparations at moderate back pressures
- + C4 and sterically-protected ES-C18 phases
- Excellent high temperature stability (up to 90 °C) for improved peak shape and recovery
- + 2 μm inlet frit
- + Pressure limit, 600 bar/9000 psi



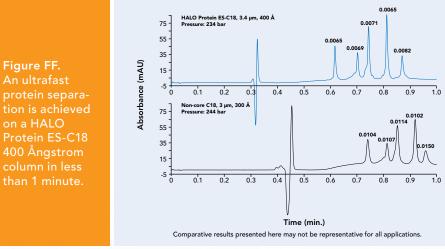


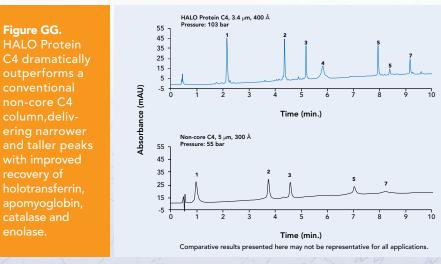
**HALO** Protein

# HIGH RESOLUTION OF LIGHT AND HEAVY CHAIN VARIANTS OF IgG1



## ULTRAFAST PROTEIN SEPARATION USING HALO PROTEIN ES-C18

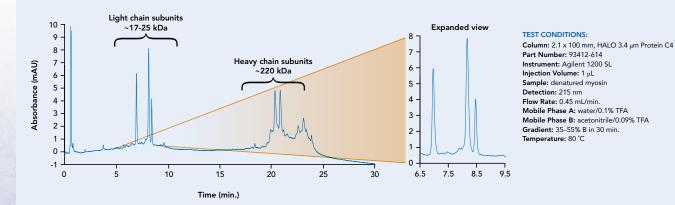




# See page 35 for full list of HALO Protein part numbers.

# LARGE PROTEIN SEPARATION USING HALO PROTEIN C4 FUSED-CORE COLUMN

Figure DD. High resolution separation of light and heavy chains of a denatured contractile protein (whole myosin from purified rabbit skeletal muscle) using HALO Protein C4 at 80 °C.



ANALYSENTECHNIK

# **AUTHORIZED DISTRIBUTOR**

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### **TEST CONDITIONS:**

Column: 2.1 x 100 mm, 3.4 µm HALO Protein C4 Part Number: 93412-614 Mobile Phase A: 0.5% formic acid with 20 mM Mobile Phase B: 45% ACN/45% IPA/10% A solvent Gradient: 29-32% B in 20 min. Temperature: 80 °C Detection: 280 nm and MS using 2pps scan rate from 500 to 2000 m/z Injection Volume: 2  $\mu$ L of 2  $\mu$ g/ $\mu$ L reduced and alkylated lgG1 Sample Solvent: 0.25% (v/v) formic acid in water MS Parameters: Positive ion mode, ESI at +4.5 kV. 400 °C heatblock, 225 °C capillary LC-MS System: Shimadzu Nexera and LCMS-2020 (single quadrupole MS)

### TEST CONDITIONS:

Column: 4.6 x 100 mm HALO Protein ES-C18 Part Number: 93414-602 Instrument: Agilent 1200 SL Injection Volume: 5 uL Detection: 215 nm Temperature: 60 °C Flow Rate: 3 mL/mir Mobile Phase A: water/0.1% TFA Mobile Phase B: acetonitrile/0.1% TFA Gradient: 23-85% B in 1 min. Using 3 and 6 µL heat exchangers in column compartment

### PEAK IDENTITIES

- 1. Ribonuclease A 2. Cytochrome c
- 3. Lysozyme
- α-Lactalbumir
- 5. Catalase

### NOTE:

Peak widths at half height are shown above respective peaks.

# HALO PROTEIN C4 PROVIDES NARROWER AND TALLER PEAKS THAN TOTALLY POROUS COLUMN

### **TEST CONDITIONS:**

Column: 2.1 x 100 mm HALO Protein C4 Part Number: 93412-614 Instrument: Agilent 1200 SL Injection Volume: 1 µL Detection: 215 nm Temperature: 60 °C Flow Rate: 0.5 mL/min. Mobile Phase A: water/0.1% TFA Mobile Phase B: acetonitrile/0.1% TFA Gradient: 25-52% B in 10 min.

### PEAK IDENTITIES

- 1. Ribonuclease A
- 2. Cytochrome c
- Lysozyme
  Holotransterri
- 5. Apomyoglobi
- 6. Catalase
- 7. Enolas