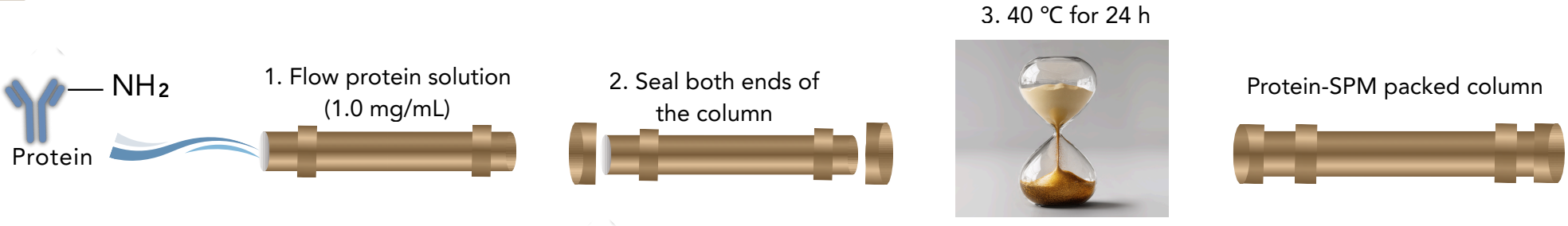
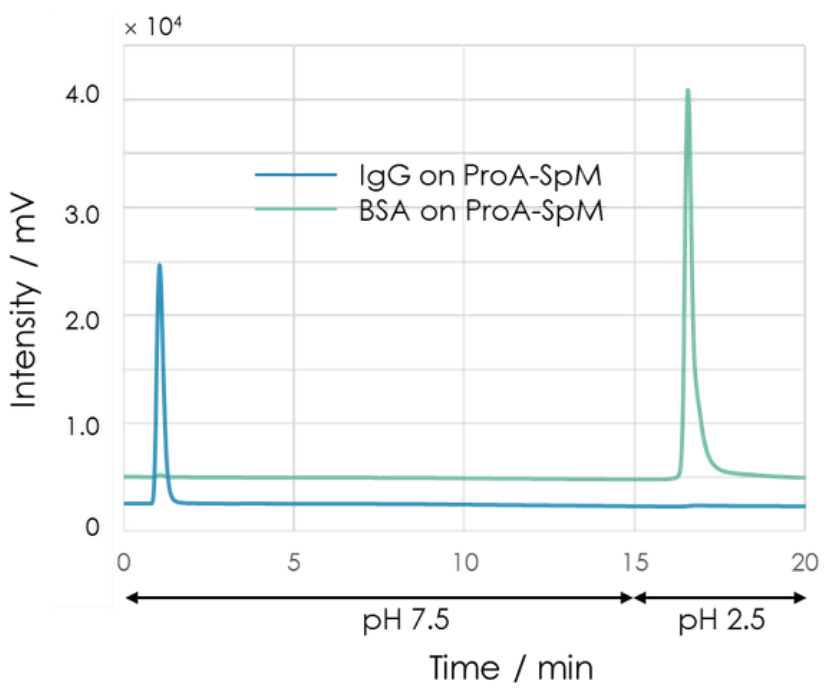
SPM: A Platform for Bioseparation

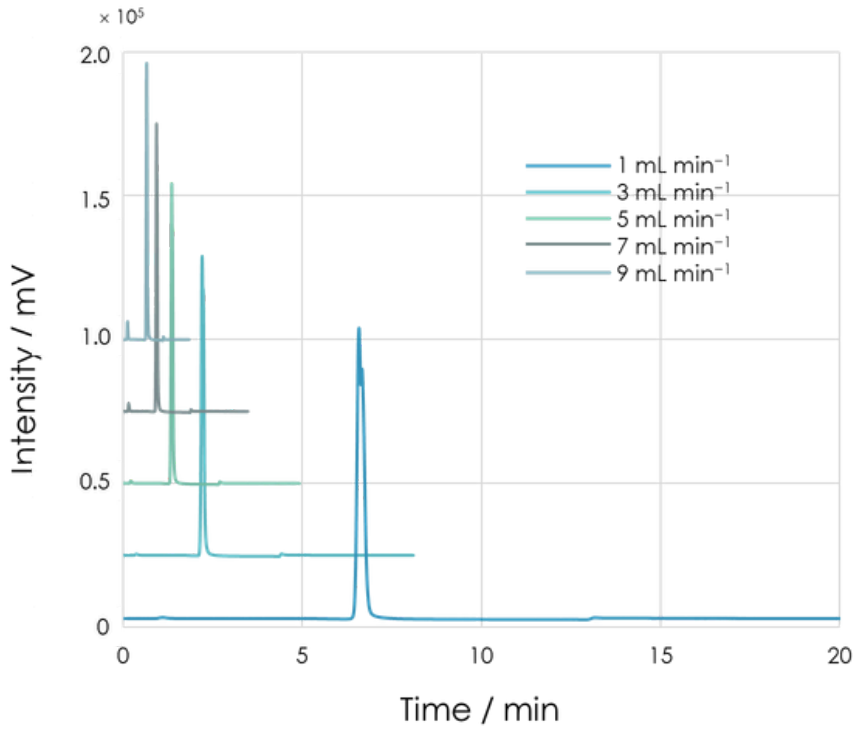
1 Protein Immobilization on PEGM-SPM



Surface epoxy groups can be further modified to introduce various functional groups.

2 High-Flow Affinity Separation Using a Protein A-immobilized SPM Column

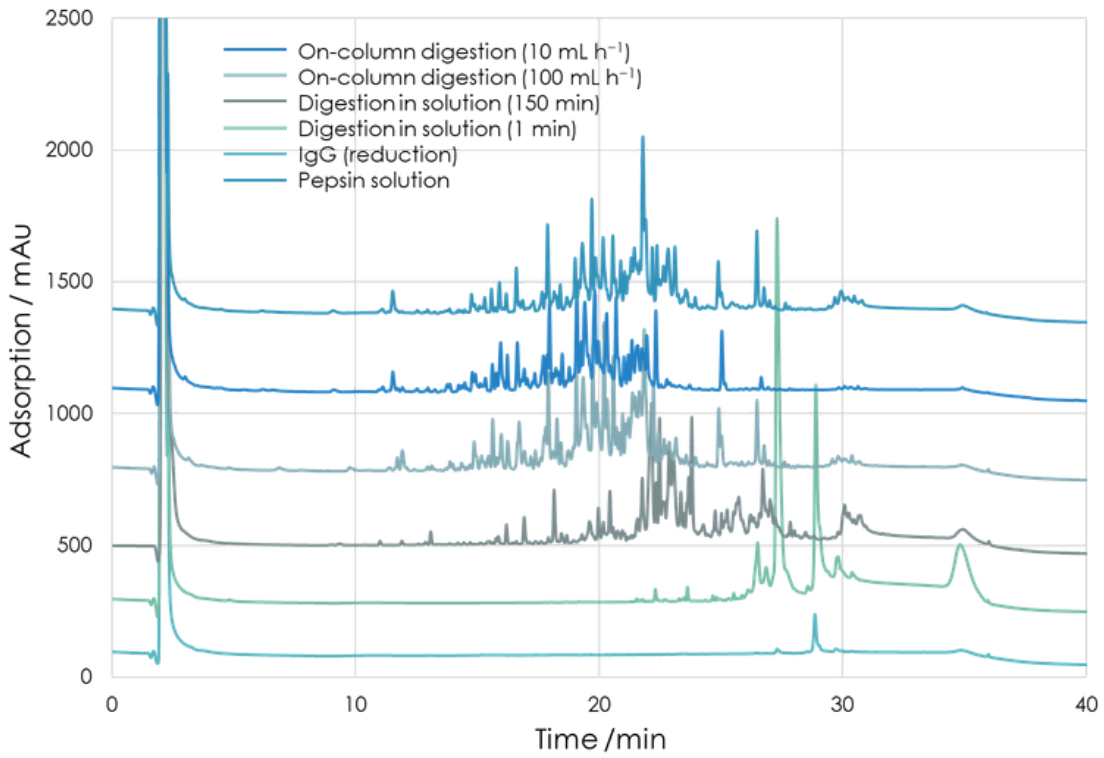




I g G: Immunoglobulin G　BSA: Bovine Serum Albumin
Mobile Phase A : 50 mM phosphate buffer +150 mM NaCl (pH7.5)
Mobile Phase B: 50 mM phosphate buffer -150 mM NaCl (pH2.5)

The ProA-SPM column can be operated at flow rate more than three times higher than those of conventional particle-packed columns.

3 On-Column Digestion Using a Pepsin-Immobilized SPM Column



When Pepsin, a digestive enzyme, is immobilized on PEGM-SPM, antibody proteins injected via the HPLC injector can be digested into peptide fragments within the column. The large flow-through pores of the monolith, enables the detection of peptide frangemnts comparable to those obtained by in-solution digestion.

SPM for High-Recovery Peptide Desalting

Efficient peptide recovery for ultrasensitive LC-MS/MS proteomics

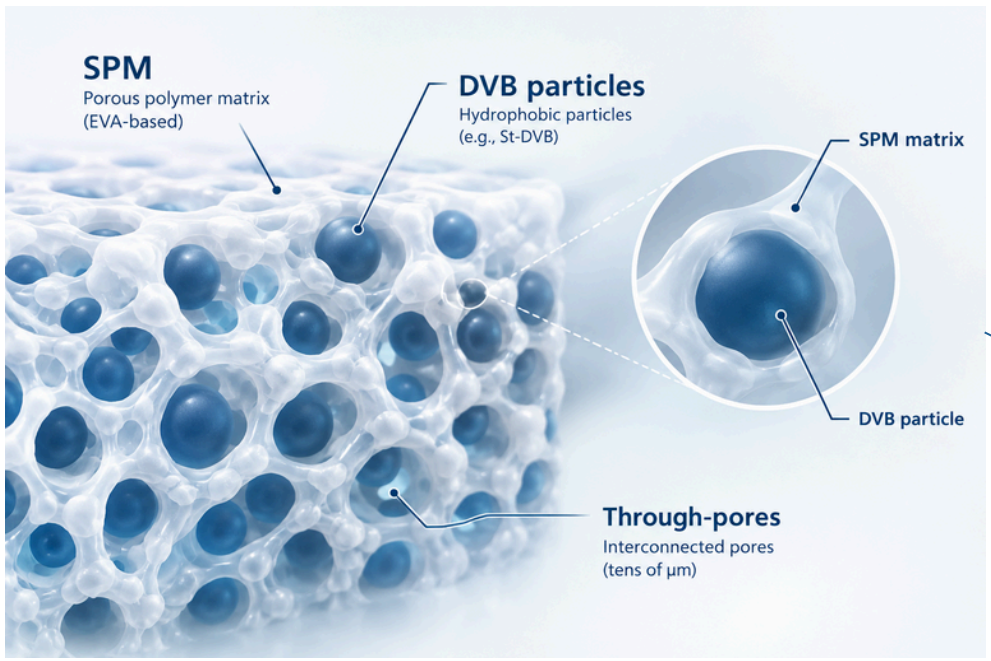
Conventional particle-packed media

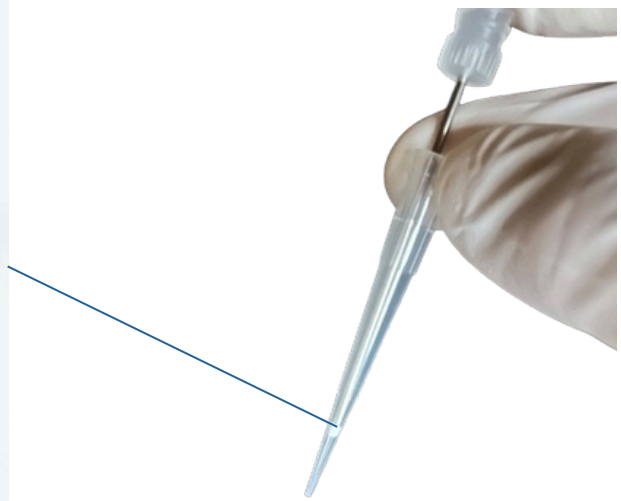
- Peptide can enter mesopores
- Irreversible adsorption
- Sample loss

VS

SPM-based hybrid structure

- Hydrophobnic surface for peptide retention
- Suppressed access to mesopres
- High peptide recovery

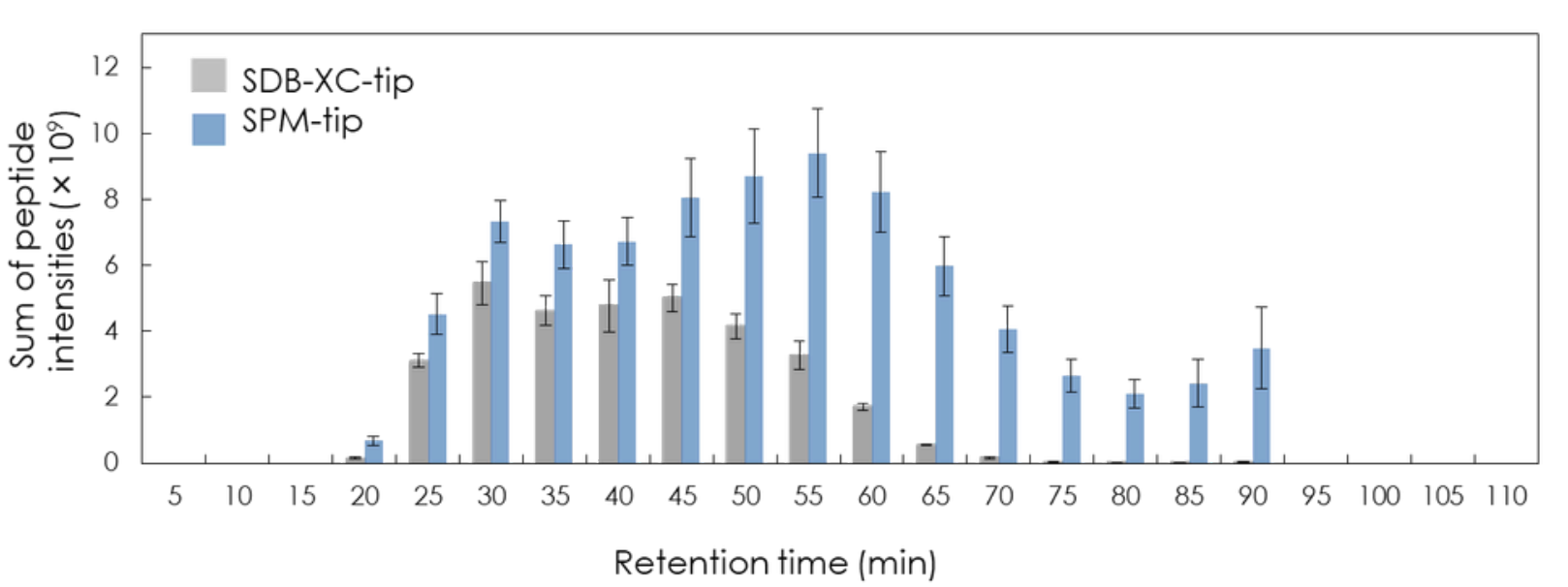




SPM-tip combines a flexible thermoplastic monolith with embedded styrene-divinylbenzene (St-DVB) chromatographic particles to achieve exceptionally high peptide recovery.

✓ Performance

SDB-XC-tip		SPM-tip	
52.2%	VS	94.9%	> 2-fold higher peptides identified from 20 ng sample



Potential Applications

- Ultrasensitive proteomics
- Low-input samples
- Peptide desalting
- LC-MS/MS sample preparation
- Single-cell / clinical proteomics*

*Possible application

SPM
Separation & Purification Maneuver