



Dacapo

 **Imtakt**

High-performance HPLC/UHPLC columns made in Japan



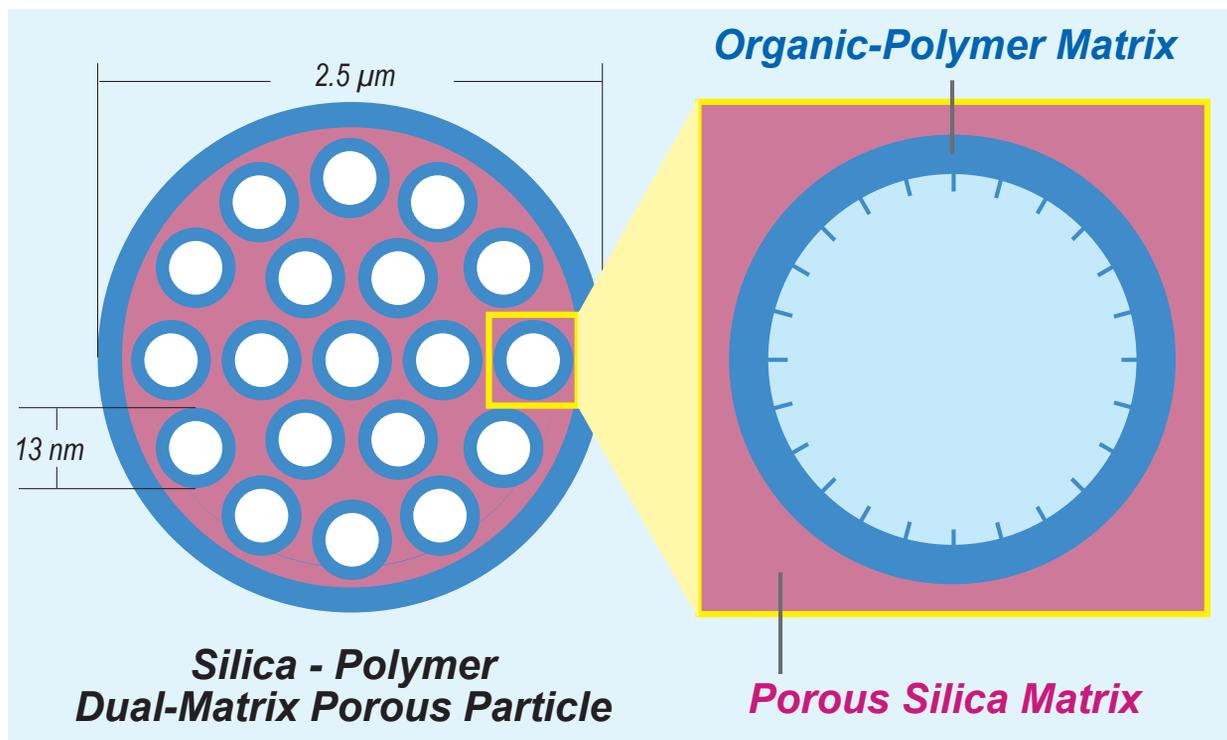
## HPLC COLUMN IMTAKT

Porous Silica / Organic Polymer Dual-Matrix ODS

# DACAPO DX-C18

2.5µm particles  
13nm pore  
Porous silica base  
Organic Polymer surface  
Octadecyl ligand (USP:L1)

**Wide pH range 1-12**  
**High-resolution 2.5µm particles**  
**UHPLC compatible (500bar)**  
**Simple eluent for LC-MS using ammonium hydroxide**  
**ESI-negative mode for peptides**  
**Alkali sample solution / Alkali column washing**



The advantage of using traditional silica-based particles is that they have a high mechanical strength; their disadvantage is that they are prone to degradation under alkali conditions. On the other hand, polymer-based particles are highly resistant to degradation under alkali conditions, but they suffer from poor performance and durability due to shrink/swelling effects when used with organic solvents.

One recent solution to this dilemma is the porous hybrid-silica with alkyl bridge surface treatment. This requires exposure of surface silanols in order to bond the ODS ligands by silylation, which is then followed by an end-capping process. Even when care is taken in this strategy, it is difficult to completely cover all remaining surface silanols, which may negatively affect peak shape and reduce lifetime of the column due to bleeding under alkali conditions.

### Particle Structure Advantage

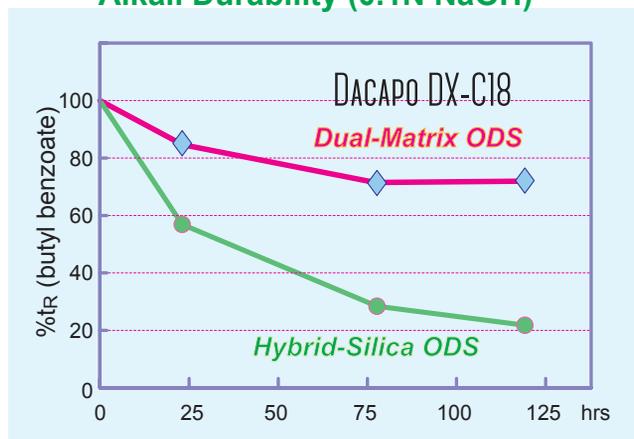
DACAPO DX-C18 is the first "Dual-Matrix" structure in the world (see the figure above). It combines the mechanical strength of porous silica with the alkyl stability of polymer-based columns by covering the entire surface with an unprecedented C18/organic polymer matrix. This unique Imtakt exclusive design brings the best of both types of columns into one, with a porous silica matrix providing the ability to withstand high pressures and organic solvents and the organic polymer matrix providing resistance to degradation under alkyl conditions and poor peak shapes caused by unwanted secondary surface silanol interactions.

## Wide pH-range Simple alkali eluents for LC-MS analysis

DACAPO DX-C18

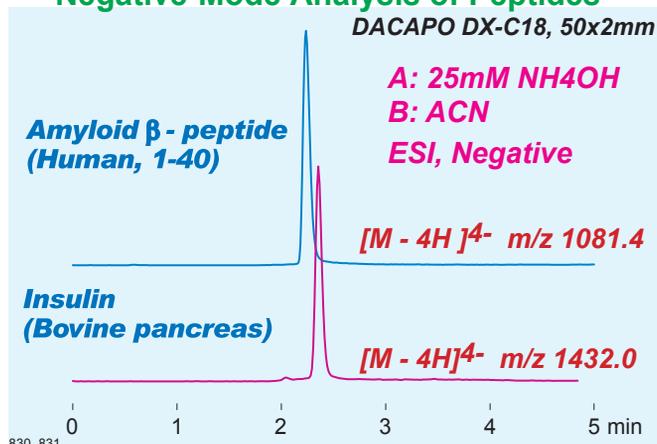
The base structure of the DACAPO material is an innovative chromatography support which consists of both mechanical and alkali stable structures. It is designed specifically for the analysis of peptides, alkaloids, and other compounds under alkali conditions using simple volatile eluents like ammonium hydroxide. This design is also quite useful for the use of high pH sample solutions for injection and/or alkali column washing conditions. The "Dual Matrix" design also provides benefit under acidic conditions, which might be preferable to improve peak shape of basic compounds, by nearly eliminating any silanol effect.

### Alkali Durability (0.1N NaOH)



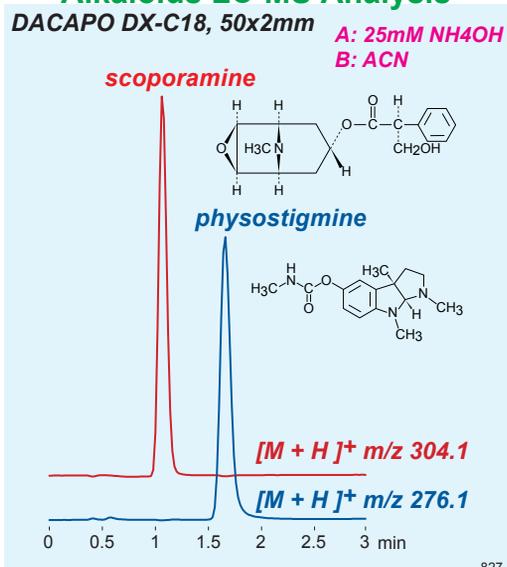
Even though hybrid-silica columns are resistant to alkali degradation, surface silanols are still susceptible to hydrolysis under high pH conditions. The surface silanols of DACAPO are completely covered with an organic polymer layer, dramatically improving alkali stability.

### Negative-Mode Analysis of Peptides



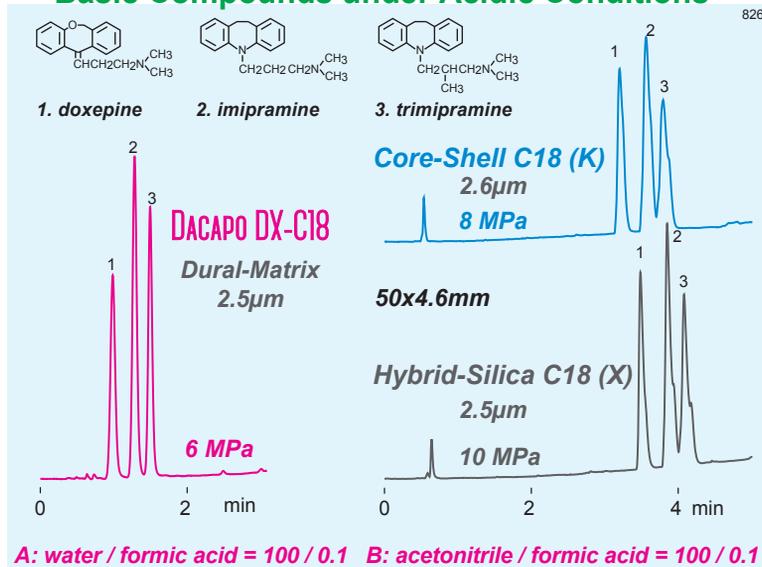
Peptides are negatively charged at pHs above its pI value, so it is better to analyze them under alkali conditions on an LC-MS using ESI-negative mode. There is not much difference in sensitivity when using negative mode under basic conditions, compared to using positive mode under acidic conditions. It may also provide different information that traditional positive mode does not.

### Alkaloids LC-MS Analysis



Strong basic compounds, like alkaloids, may show longer retention times, improved peak shape and better MS sensitivity when using alkali eluents.

### Basic Compounds under Acidic Conditions



Basic compounds with multivalent ions commonly show splitting peaks due to multiple ionic interactions with exposed surface silanols. DACAPO DX-C18 will provide better peak shape because it does not have any exposed surface silanols.

## PRODUCT INFORMATION 2.5µm particle, 13nm pore, C18 ligands, 500bar Max.pressure, M.W. up to 10kDa

NAME	COLUMN I.D.	COLUMN LENGTH	GUARD COLUMN
DACAPO DX-C18	1mm, 2mm, 3mm, 4.6mm	10mm, 20mm, 30mm 50mm, 75mm, 100mm 150mm, 250mmmm	Guard Holder Guard Cartridge DX-C18

Micro/Nano columns are available



Imtakt USA ( [www.imtaktUSA.com](http://www.imtaktUSA.com) )  
North America

Imtakt Corp./JAPAN ( [www.imtakt.com](http://www.imtakt.com) )  
Other Countries

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