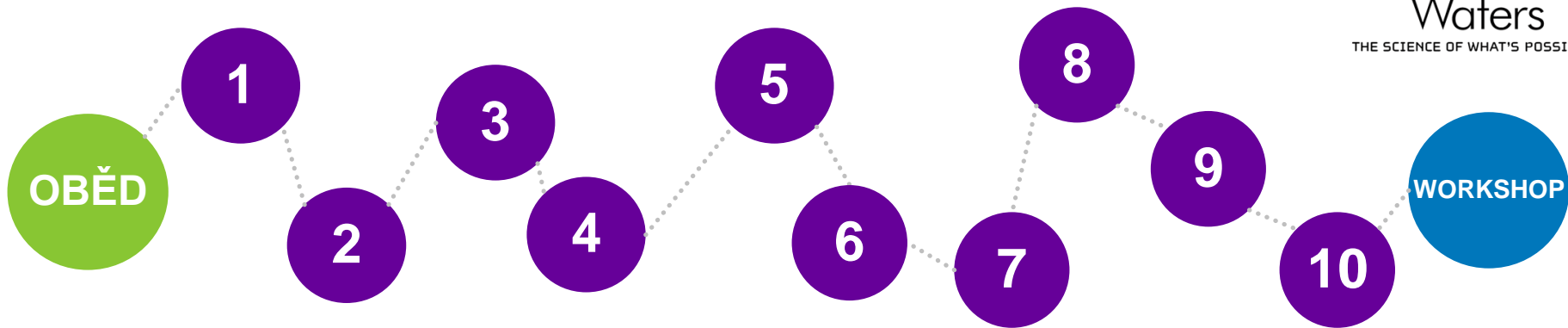


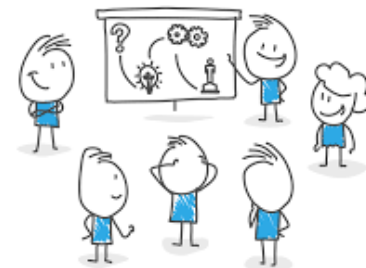
MaxPeak HPS technologie na kolonách a LC hardwaru

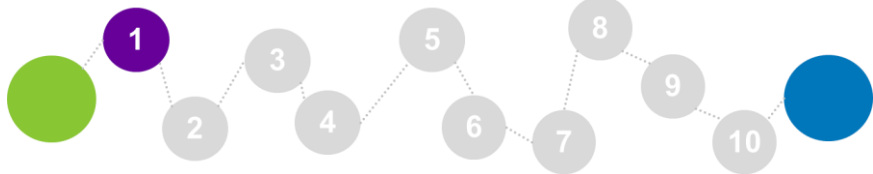
Martina Riesová

HPLC.cz 2023, 16.5. 2023, Zaječí

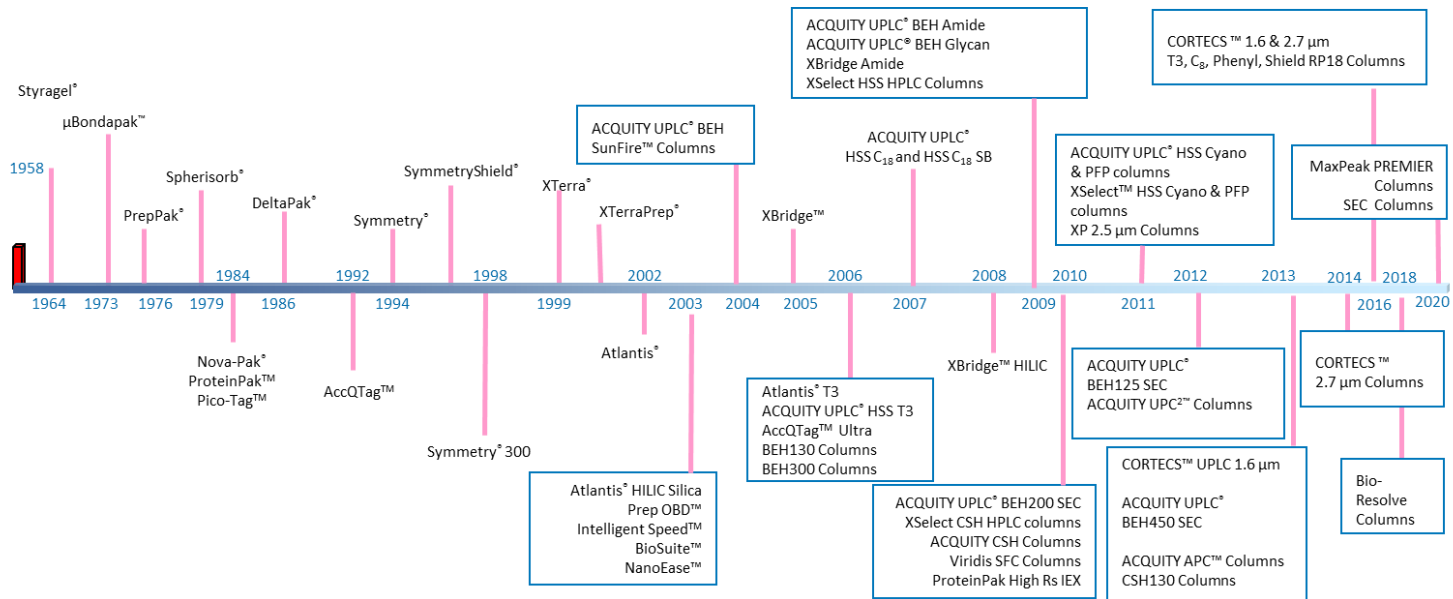


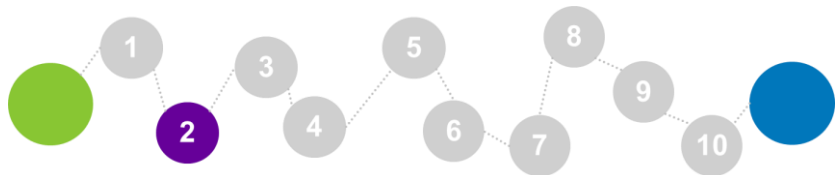
workshop interesting facts
troubleshooting fast tips
peaks column peak quick information
fact useful important
lunch





Jak dlouho už pro Vás Waters vyvíjí LC kolony...





Kam se ubírá
nejnovější vývoj
kolon...

Waters
THE SCIENCE OF WHAT'S POSSIBLE.™

CORTECS™ 1.6 & 2.7 μm
T3, C₈, Phenyl, Shield RP18 Columns

MAXPEAK™
HIGH PERFORMANCE SURFACES

TY UPLC® HSS Cyano
columns
t™ HSS Cyano & PFP
ns
μm Columns

2011 2012 2013 2014 2016 2018 2020

UITY UPLC®
125 SEC
UITY UPC™ Columns

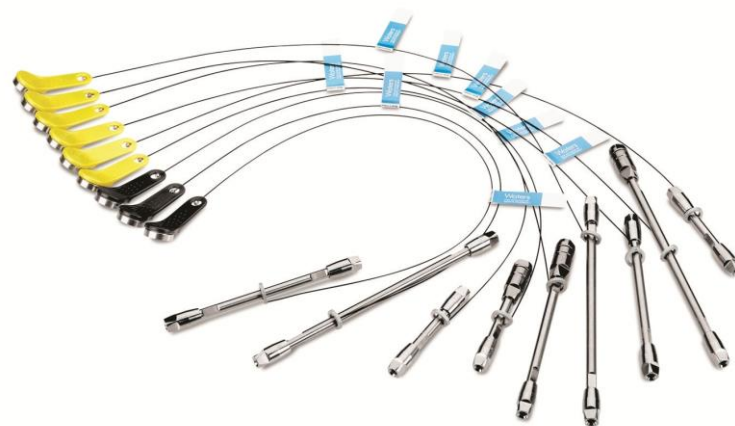
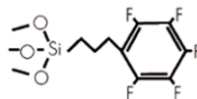
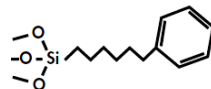
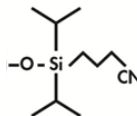
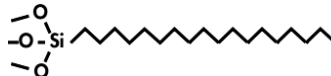
CORTECS™
2.7 μm Columns

CORTECS™ UPLC 1.6 μm

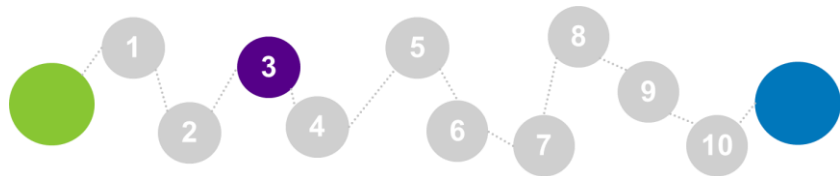
Bio-
Resolve
Columns

ACQUITY UPLC®
BEH450 SEC

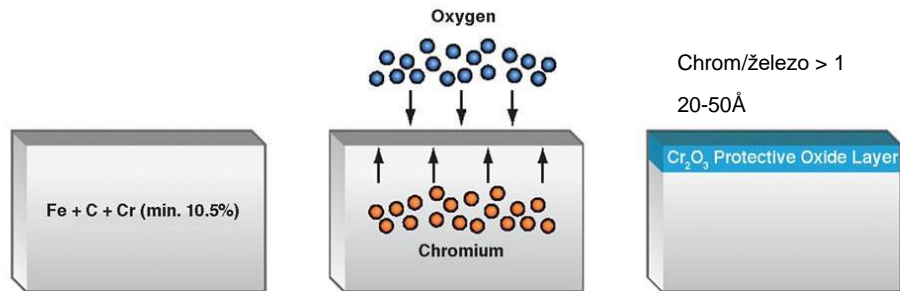
ACQUITY APC™ Columns
CSH130 Columns



Vylepšení
kolonového hardwaru



Co je nerezová ocel a
co jsou Lewisovy
kyseliny...

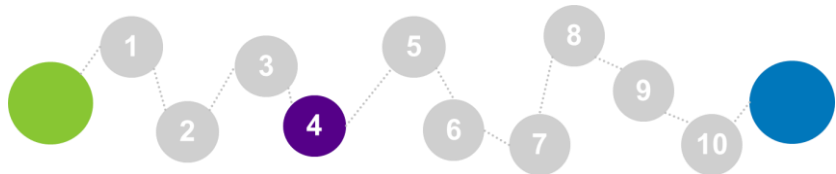


- Vyhovující mechanické vlastnosti
- Odolnost proti tlaku
- Odolnost proti solventům mobilní fáze

LEWIS ACID					
HARD	H ⁺	Na ⁺	K ⁺	Be ²⁺	Mg ²⁺
	Ca ²⁺	Mo ²⁺	Mn ²⁺	Al ³⁺	Sc ³⁺
	In ³⁺	Cr ³⁺	Co ³⁺	Fe ³⁺	Ti ⁴⁺
	Zr ⁴⁺	U ⁴⁺	Ce ³⁺	Sn ⁴⁺	BF ₃
	AlCl ₃	AlH ₃	SO ₃	NO ₂ ⁺	CO ₂
BORDERLINE	Fe ²⁺	Co ²⁺	Ni ²⁺	Cu ²⁺	Zn ²⁺
	Pb ²⁺	Sn ²⁺	Sb ³⁺	Bi ³⁺	Ir ³⁺
	B(CH ₃) ₃	SO ₂	Ru ²⁺	R ₃ C ⁺	C ₆ H ₅ ⁺
SOFT	Cu ⁺	Ag ⁺	As ⁺	Tl ⁺	Hg ₂ ²⁺
	Pd ²⁺	Cd ²⁺	Pt ²⁺	Hg ²⁺	Tl ³⁺
	BH ₃	I ⁺	Br ⁺	H-O ⁺	R-S ⁺
	R-Se ⁺	I ₂	Br ₂	H ₂ C	
	R ₂ C	C ₆ H ₃ (NO ₂) ₃			

Lewisovy kyseliny

Mají volný orbital a
jsou ochotné přijmout
elektronový pár

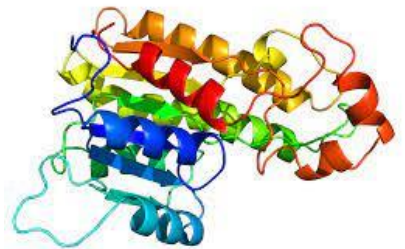
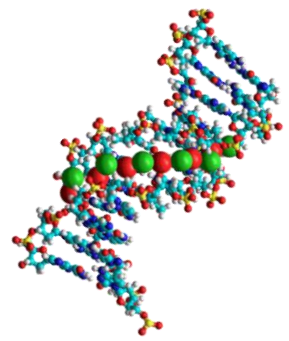
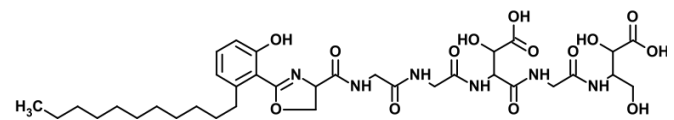
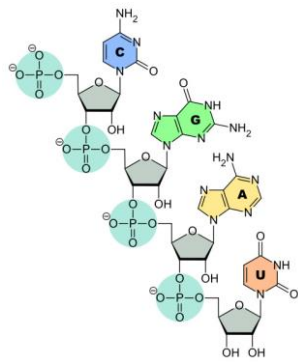
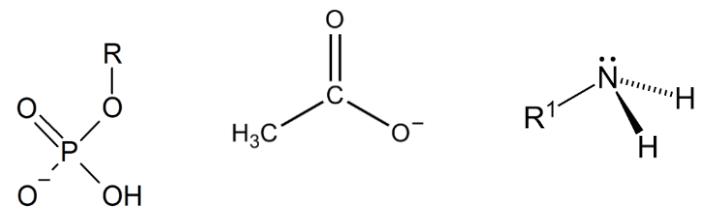


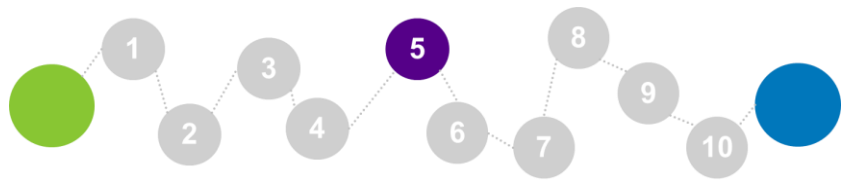
Co jsou Lewisovy báze...

	LEWIS BASE			
HARD	H ₂ O	HO ⁻	F ⁻	H ₃ C-CO-O ⁻
	PO ₄ ³⁻	SO ₄ ²⁻	Cl ⁻	CO ₃ ²⁻
	ClO ₄ ⁻	NO ₃ ⁻	R-OH	R ₂ O
	H ₃ N	R-NH ₂	H ₂ N-NH ₂	
BORDERLINE	C ₆ H ₅ -NH ₂	C ₅ H ₅ N	N ₃ ⁻	
	Br ⁻	NO ₂ ⁻	SO ₃ ⁻	N ₂
SOFT	R ₂ S	R-SH	R-S ⁻	I ⁻ SCN ⁻
	R ₃ P	R ₃ As	(H ₃ CO) ₃ P	N≡C ⁻
	C=O	H ₂ C=CH ₂	C ₆ H ₆	H ⁻ R ⁻

Lewisovy báze

Donor elektronového páru

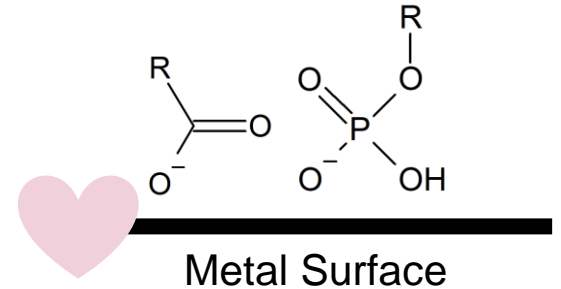




Co jsou nespecifické interakce...

Non-Specific Binding (NSB), Non-Specific Adsorption (NSA)

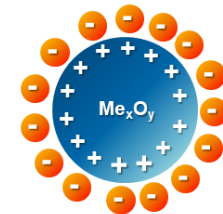
- Každá nezamýšlená vazba nebo interakce
 - Interakce látek se stejnou, podobnou polaritou hydrofóbní interakce
 - Iontové interakce – columbické síly mezi nabitými molekulami
 -



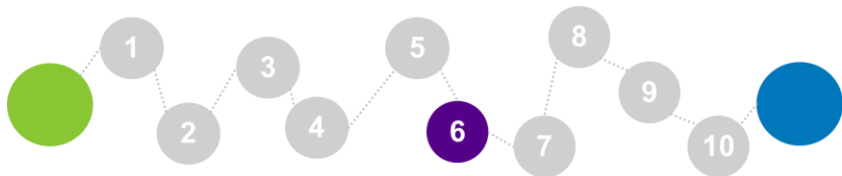
LEWIS ACID				
H ⁺	Na ⁺	K ⁺	Be ²⁺	Mg ²⁺
Ca ²⁺	Mo ²⁺	Mn ²⁺	Al ³⁺	Sc ³⁺
In ³⁺	Cr ³⁺	Co ³⁺	Fe ³⁺	Ti ⁴⁺
Zr ⁴⁺	U ⁴⁺	Ce ³⁺	Sn ⁴⁺	BF ₃
AlCl ₃	AlH ₃	SO ₃	NO ₂ ⁺	CO ₂



LEWIS BASE			
H ₂ O	HO ⁻	F ⁻	H ₃ C-CO-O ⁻
PO ₄ ³⁻	SO ₄ ²⁻	Cl ⁻	CO ₃ ²⁻
ClO ₄ ⁻	NO ₃ ⁻	R-OH	R ₂ O
H ₃ N	R-NH ₂	H ₂ N-NH ₂	



pH < 5
Strong adsorption



Jaká je vysněná analytická metoda...



- symetrické píky



- vysoká výtežnost, opakovatelnost, reprodukovatelnost



- vyhovující citlivost

- rozlišení kritických párů



- vidím “všechno”



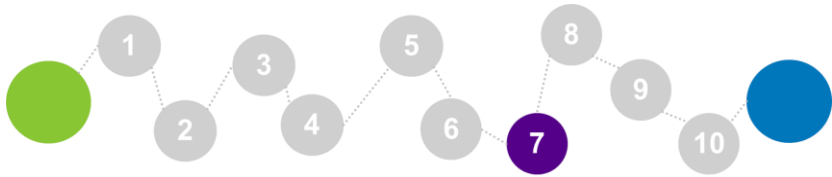
Non-specific binding

odstínění, zeslabení interakcí

- pasivace
- coating
- aditiva

zamezení interakcí

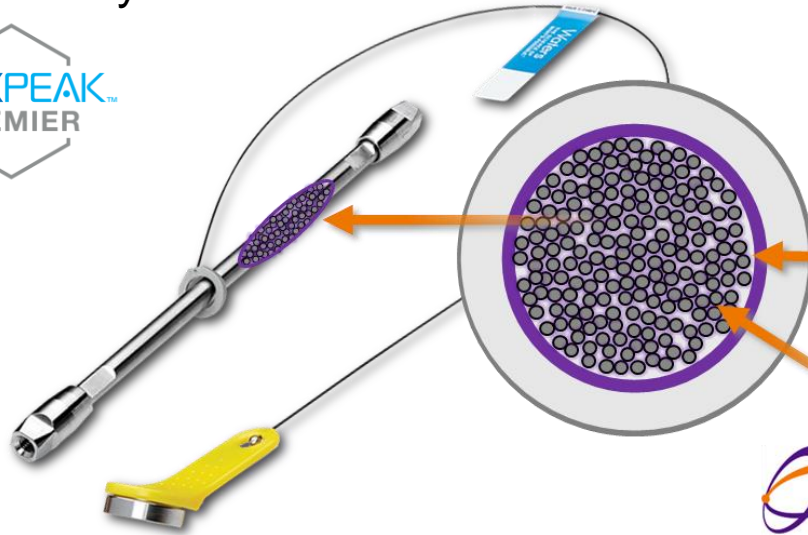
- změna materiálu ?
(Ti, MP35N, PEEK)



MAXPEAK™
HIGH PERFORMANCE SURFACES

Waters
THE SCIENCE OF WHAT'S POSSIBLE.™

LC kolony



Surfaces
MAXPEAK™
HIGH PERFORMANCE SURFACES

Particles



BEH Technology™



HSS

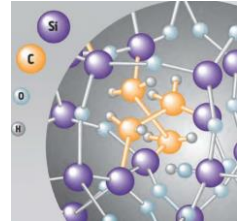
HIGH STRENGTH SILICA

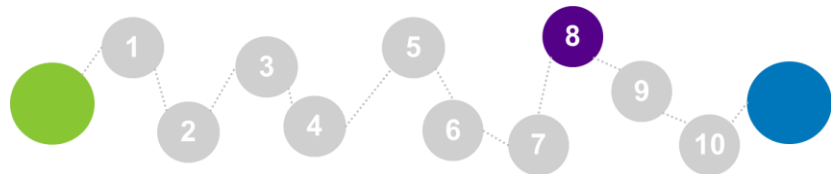


CSH™

Technology

Hybrid Organic/
Inorganic Technology



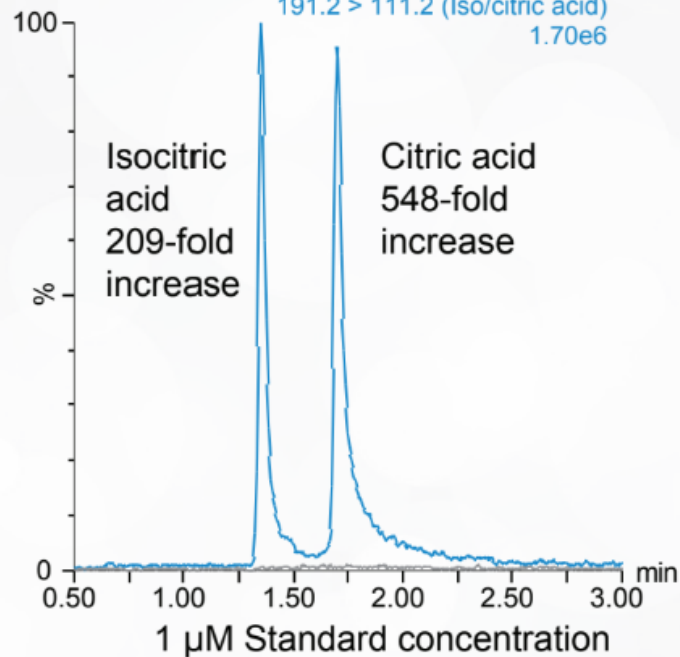


Pomáhá to...

ACQUITY Premier CSH Phenyl-Hexyl Column

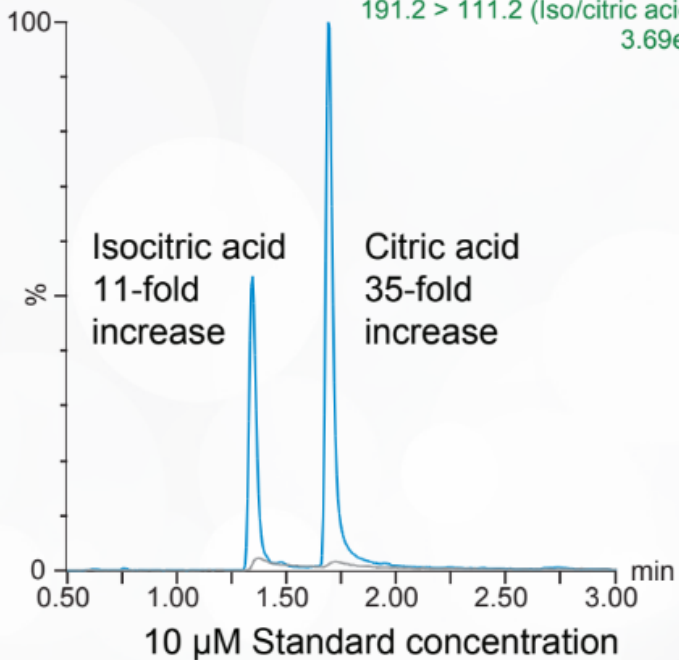
28K18_051

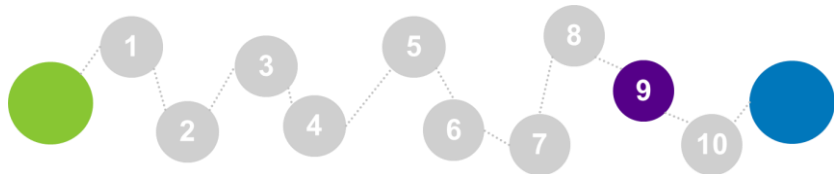
MRM of 30 Channels ES-
191.2 > 111.2 (Iso/citric acid)
1.70e6



28K18_054

MRM of 30 Channels ES-
191.2 > 111.2 (Iso/citric acid)
3.69e7

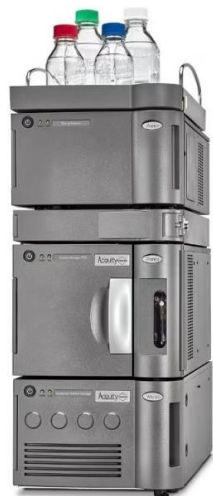




Kolony nejsou to
jediné....

Waters
THE SCIENCE OF WHAT'S POSSIBLE.™

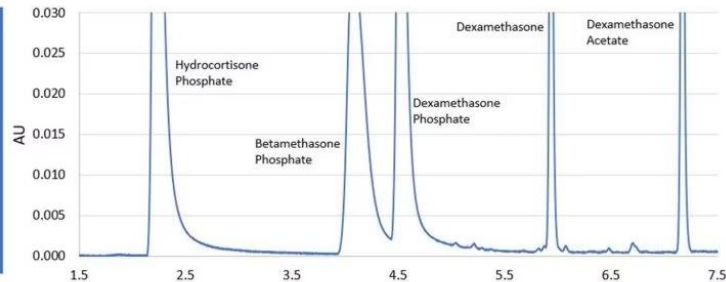
MAXPEAK™
HIGH PERFORMANCE SURFACES



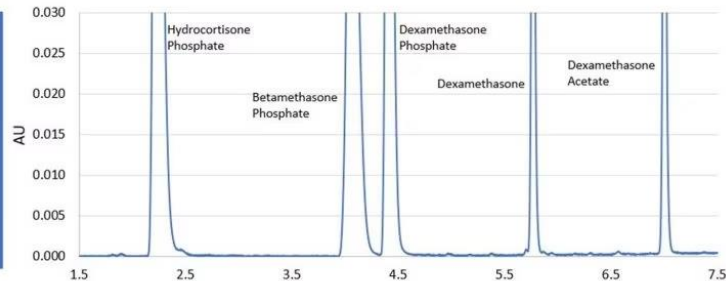
Acquity PREMIER

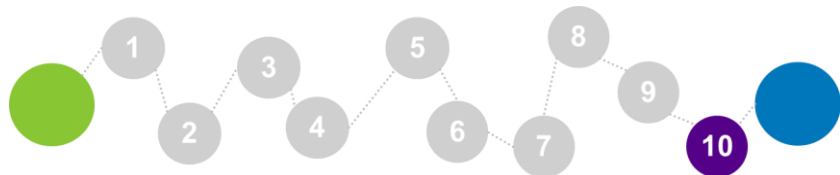
Arc PREMIER

Conventional LC



Arc Premier Solution





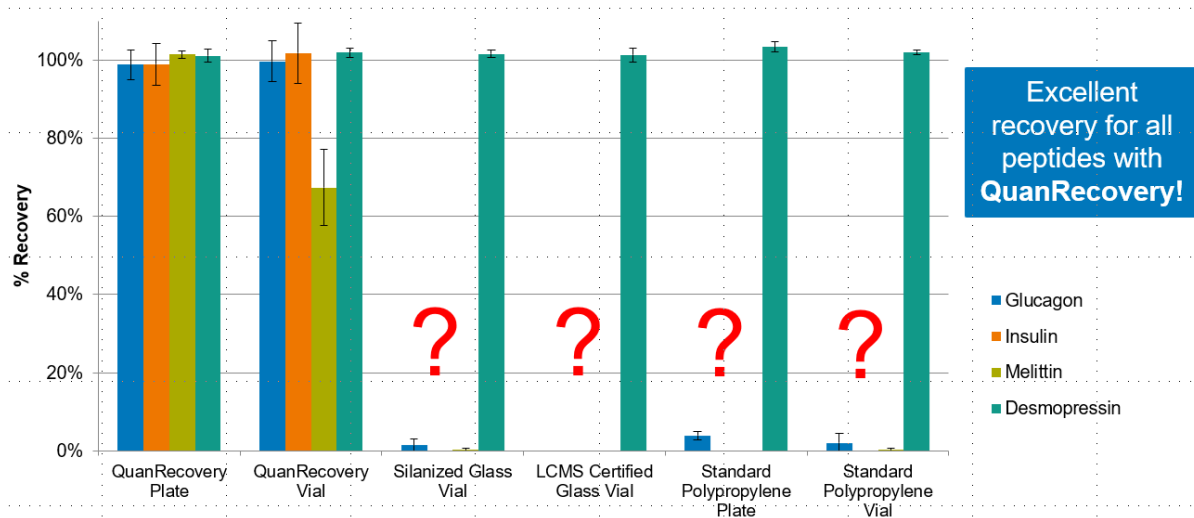
Vzorek se může ztrácet i ve vialkách...

MAXPEAK™
HIGH PERFORMANCE SURFACES



Vials & Plates

QuanRecovery™
WITH MAXPEAK^{HPS}



Excellent recovery for all peptides with **QuanRecovery!**

N=4, 1ng/mL after 24h hours at 4 °C. 80:20 water-acetonitrile solution acidified with 0.2% trifluoroacetic acid (TFA)

zamezení hydrofóbním interakcím



To the MAX

Děkuji Vám za
pozornost

up to **10x**
assay to assay precision*

30%
faster data processing

5x
increased sensitivity*

Eliminate
Doubt.

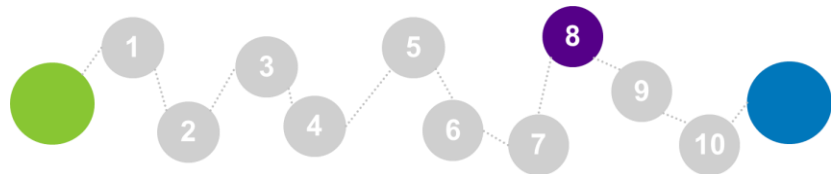
MaxPeak
Premier.

34,000
columns sold worldwide since 2020

UP TO
100%
RECOVERY*

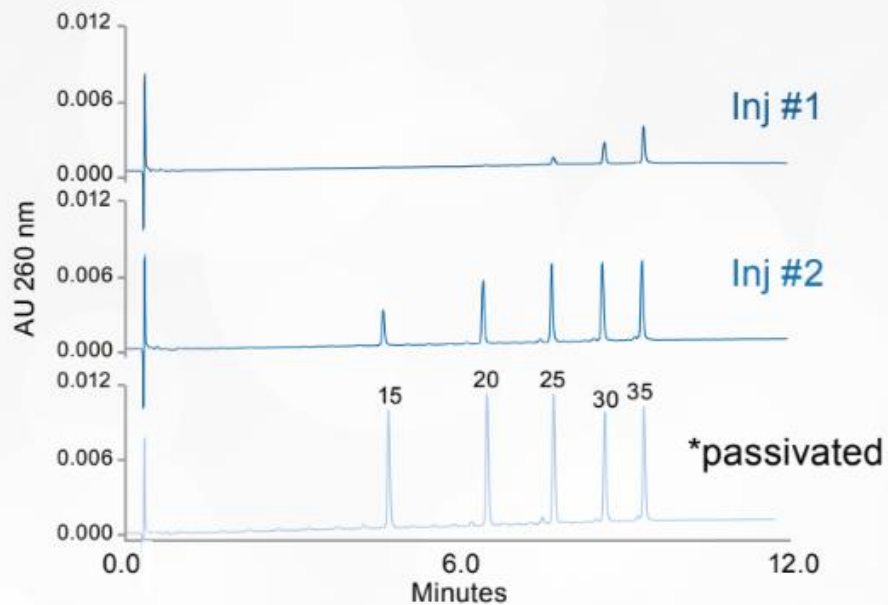
53%
LESS TAILING FOR ACIDS*

Biopharma Innovation
of the Year 2021
[Click here for more details.](#)



Pomáhá to

Conventional LC Column 15–35 mer oligonucleotides



ACQUITY PREMIER Oligonucleotide C18, 130 Å Column Full recovery from injection 1

