



**ThermoFisher**  
S C I E N T I F I C



# Chromatography Columns and Consumables

## Key products & Workflows

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23.10.2019

We take pride in our Mission



We enable our customers to make the world  
healthier, cleaner and safer



**300**

Business unit  
employees

**125+**

Commercial  
employees  
supporting our  
customers

Over **165**

Operations team  
members globally

**5** sites

**3** countries and  
**4** time zones

More than **10**  
**languages**  
spoken

**Bellefonte, PA** (12K sq. ft)

Capabilities:  
• LC packing  
• Distribution

**Runcorn, UK** (13K sq. ft)

Capabilities:  
• Silica manufacturing  
• Research and development  
• Application/method development  
• Distribution

**Langerwehe, DE** (26K sq. ft)

Capabilities:  
• Closure/Septa processing and assembly  
• Value-added assembly/kitting  
• Distribution

**Sunnyvale, CA**

Capabilities:  
• R&D  
• Media and Chemistry  
• Column Packing

**Rockwood, TN** (50K sq. ft and 35K sq. ft w/ JV)

Chrom. Capabilities:  
• Value-added assembly/kitting  
• Injection molding products  
• World-class WMS/Distribution



# Serving the main Analytical Workflows & Market Segments

## Technologies/techniques

- **Sample preparation:** SPE, Filters, Quechers
- **Sample handling:** Vials, Septum, Crimping tools, Plates
- **GC:** Columns & consumables (septa, liners, ferrules, syringes), reagents and equipment
- **LC:** Columns for Bio LC applications, nano, UHPLC, analytical and prep scale



### for biopharmaceutical markets

A wide range of Thermo Scientific™ capability solutions which are built for biopharma.



### Biopharmaceutical Market

### for environmental analysis markets

A range of Thermo Scientific™ capabilities for air, water and soil analysis that provide reliable, accurate, and precise results that can make compliance simpler and help minimize regulatory risks.



### Environmental Analysis Market

### for food and beverage markets

Whether you are testing for contaminants or developing a new production process, we are here to help. Our innovative Thermo Scientific™ products and range of solutions allow you to deliver safe, high-quality food products that consumers expect.



### Food & Beverage Markets

### for pharmaceutical and clinical markets

Innovative, reliable and easy-to-use Thermo Scientific™ solutions to help you meet the demanding needs at every stage of your workflow.



### Pharmaceutical & Clinical Markets

# Sample handling solutions – autosampler vials and closures

Over 2000 products including high quality grade inert glass and plastic vials, sample containers, sure stop closures, septa, skits, crimper tools and racks.

## Vials and closures



## Webseal plates and mats



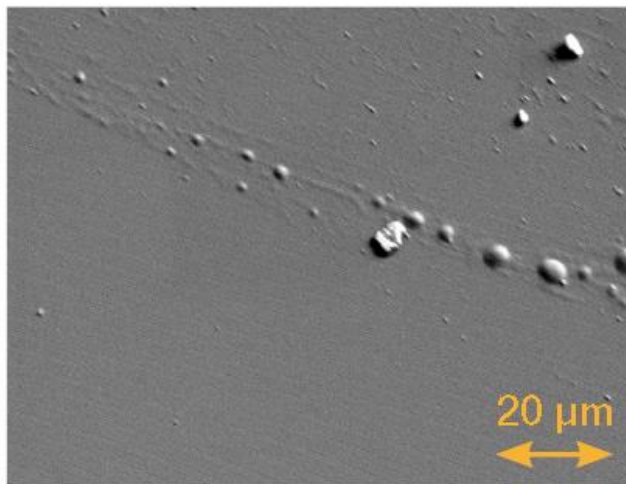
## Sample management



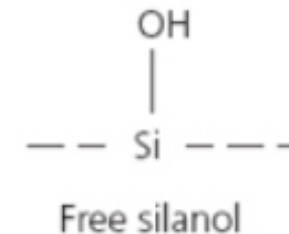
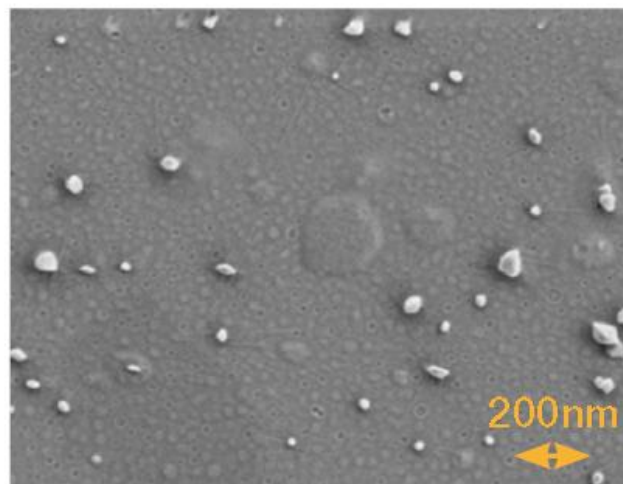
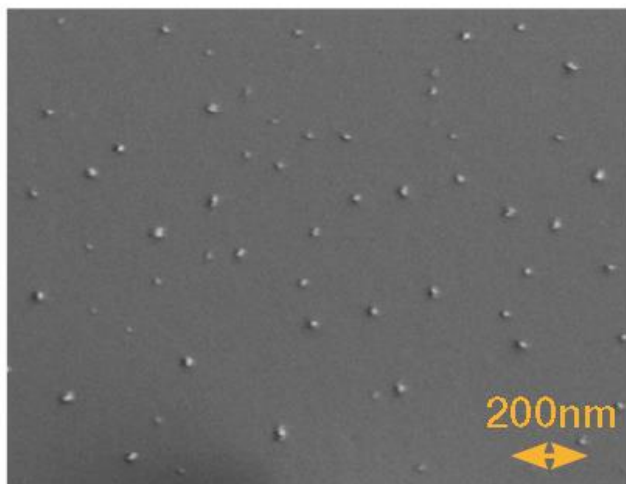
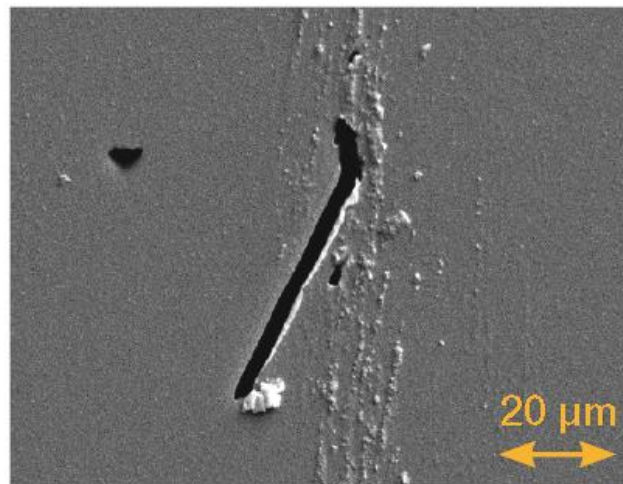


# Innovative Designs and Superior Glass Quality - Chromacol™ GOLD-Grade

33 expansion glass, clear

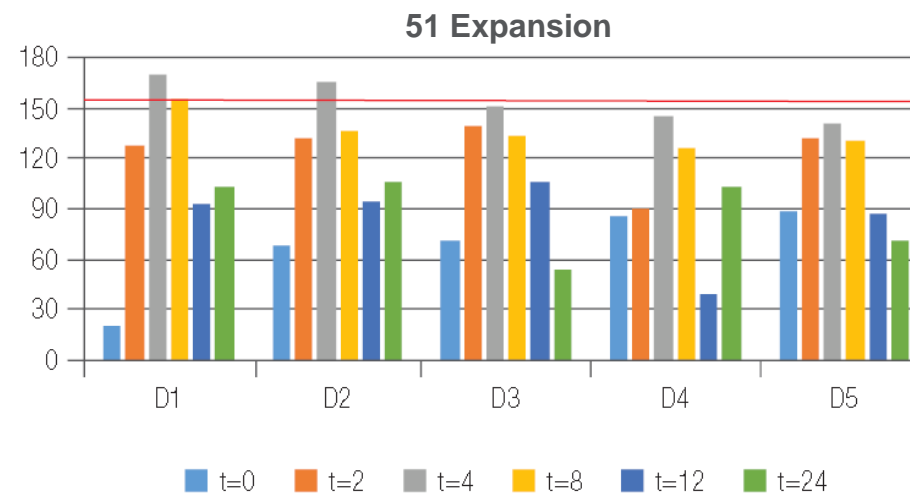
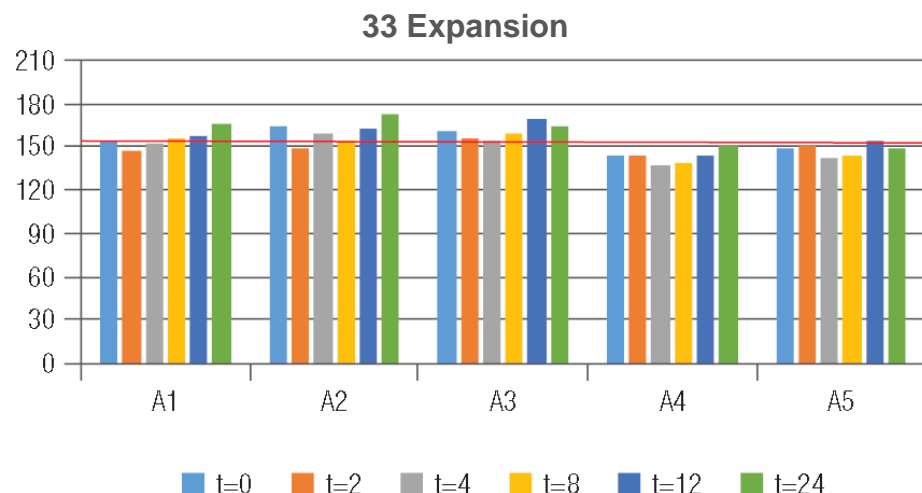
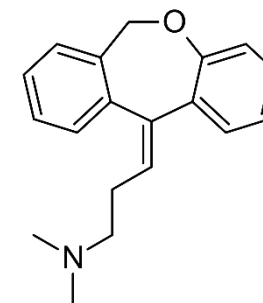
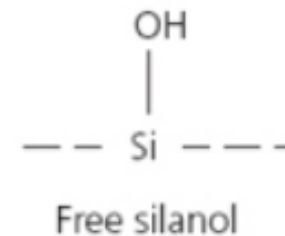
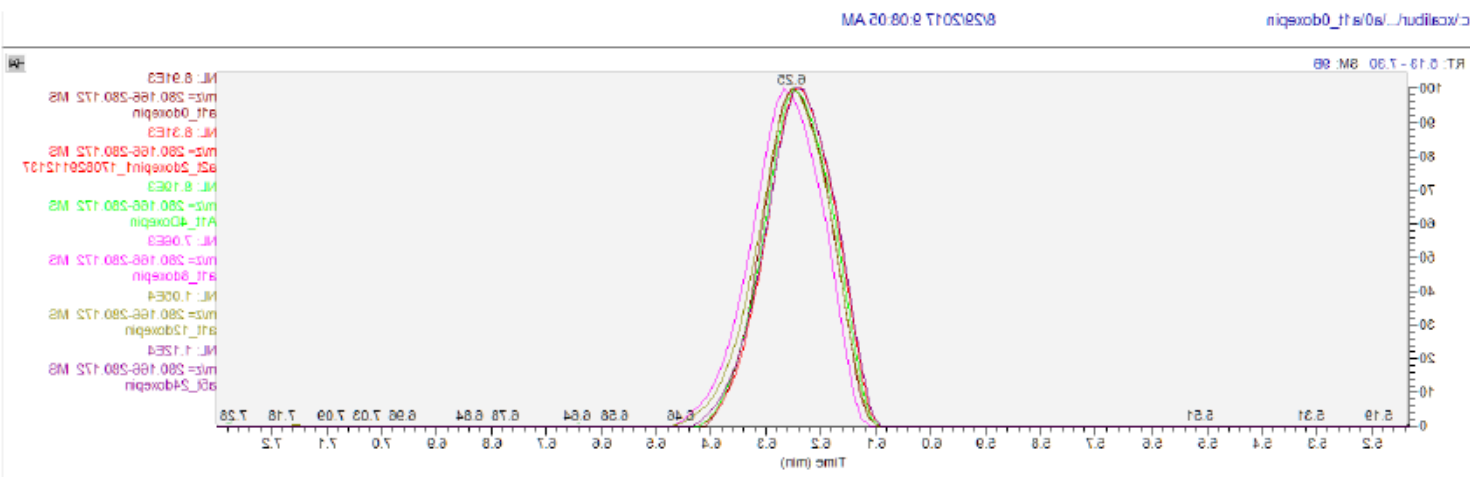


70 expansion glass, clear



- 1<sup>st</sup> Hydrolytic class
- Critical low detection limit analytes
- Ultra-low adsorption surface for critical polar compounds
- Highest Recovery Rates

# Study on Doxepin (tertiary amines) in Blood Serum



- Excellent vial-to-vial reproducibility
- Excellent recovery
- 13% difference from target value vs. 86%

# Solutions to the challenges – start with sample preparation

## Sample preparation

- SMART Digest™ Kits
- SMART Digest™ IA Kits
- SMART Digest™ Automation

### Sample preparation



## SPE

- SOLA™ and SOLA $\mu$ ™
- HyperSep™ Retain PEP, CX, AX
- SLE
- Protein precipitation

### SPE



## Others

- Syringe filters
- Disposable syringes
- Manifolds
- Lab/filter plates
- Tips/spin tips

### Others





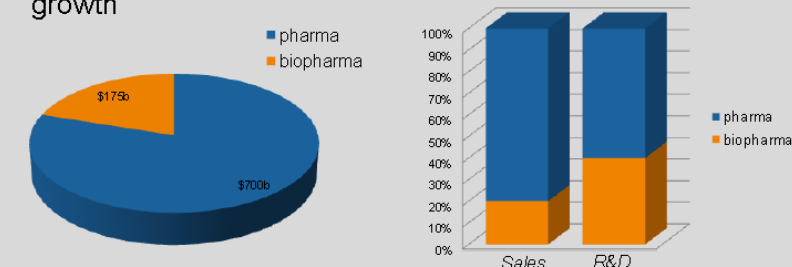
# The growing Biopharma

- 8/10 drugs in 2016 biologics
- Biopharma growing ~10% over the next five years
- \$175 billion
- Success rate at clinical phase I
  - Classic synthetic drugs ~7%
  - Biologics ~ 12%

## Biopharmaceutical Market

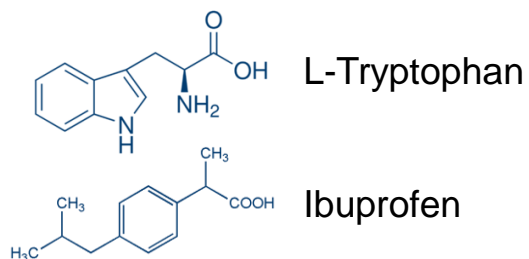
The biopharma market is growing quickly

- Biopharmaceuticals growth exceeds small molecule pharma growth



\*Sources: IMS Health, BCC Research, Pharmaceutical Technology, Biopharm International, Reuters, PhRMA

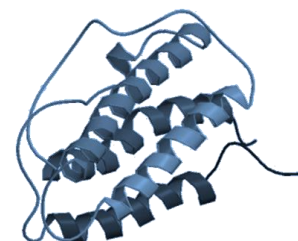
“Six of Roche’s top 10 -selling drugs in 2012 were biotech medicines, accounting for 60 percent of its pharmaceutical sales.”



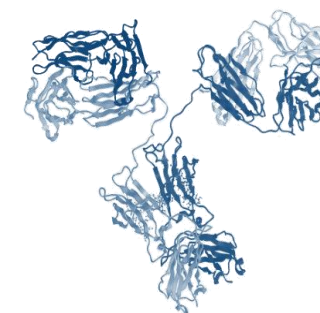
**Typical pharmaceutical**  
MW ~ 200 Da  
e.g. Ibuprofen



**Insulin**  
MW ~ 6000 Da  
51 amino acids  
e.g. Lantus



**Erythropoietin (EPO)**  
MW ~ 18000 Da  
165 amino acids  
e.g. Eprex

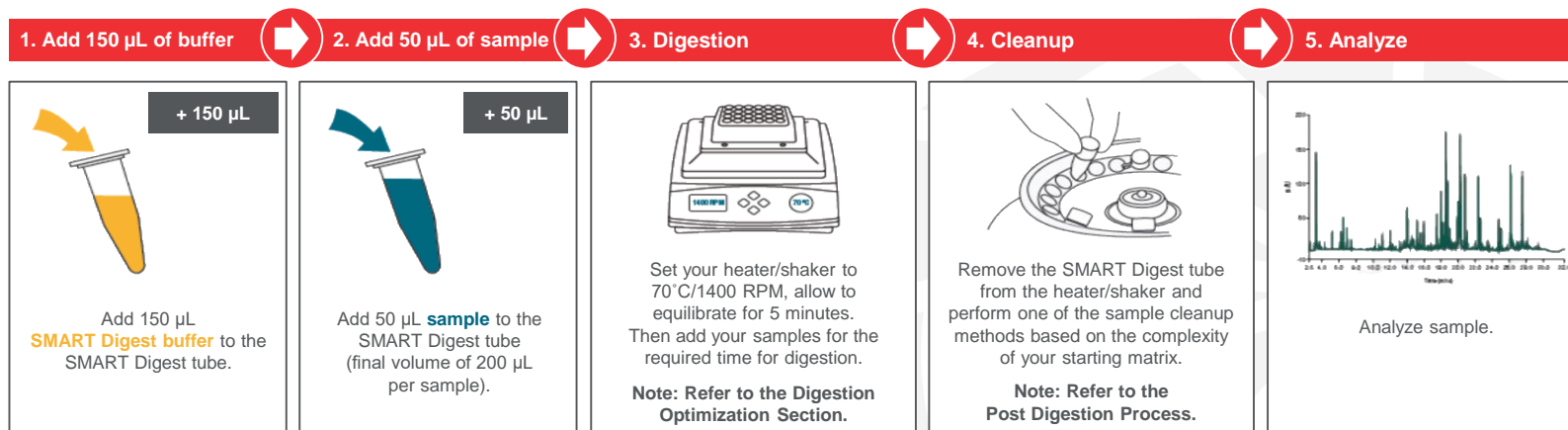


**mAbs**  
MW ~ 145000 Da  
> 1300 amino acids  
e.g. Humira

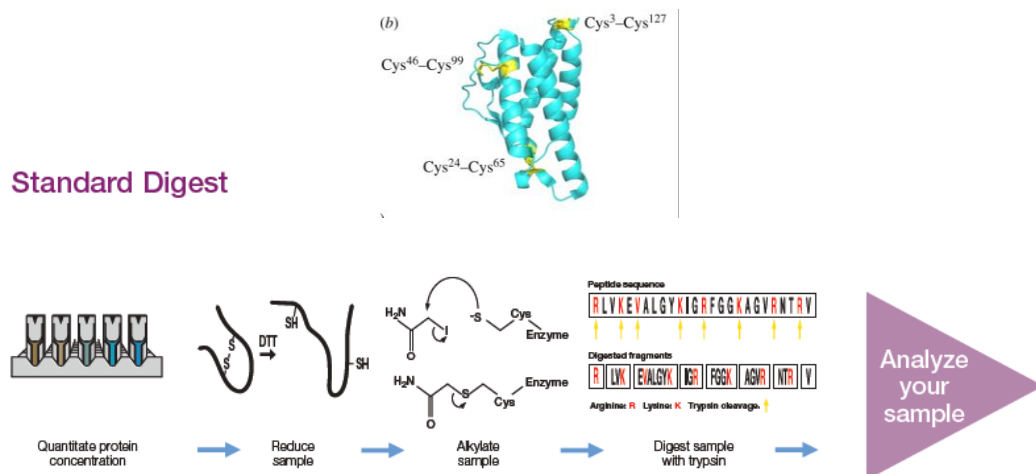
# SMART Digest Kits for peptide mapping and quantitation

## Reproducible clean up and pre-concentration

- Significantly easier process than in-solution digestion
- Significantly quicker ~1hr for mAb's vs. 24h
- Highly reproducible user to user, day to day, lab to lab
- High quality results – 100% sequence coverage



## Standard Digest



- Make up reagents: 8M Urea, DTT, Iodoacetamide, Trypsin
- Perform protein quantification
- Reduction of disulfide bridges: 30 – 60 min
- Alkylation of Cysteines: 30 min
- Quenching of excess Iodoacetamide: 15 min
- Dilute to 1 M Urea
- Add trypsin to vial and digest overnight: 24 hrs
- Spin to remove particulates
- Extract peptides with SPE

## Dedicated to separation science

### Premier



#### Premier

- Accucore™
- Accucore™ Vanquish™
- HypersilGOLD™
- Acclaim™
- Synchronis™
- Hypercarb™

### Legacy



#### Legacy

- Hypersil™ BDS
- Hypercarb™
- Hypersil™ Classic
- Hypurity™

### BioLC



#### BioLC

- MabPac™
- ProPac™
- GlycanPac™
- DNAPac™
- ProSwift™
- BioBasic™

### NanoLC



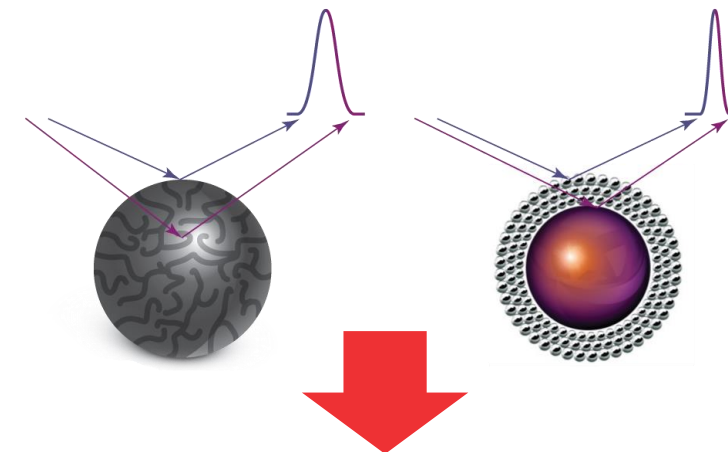
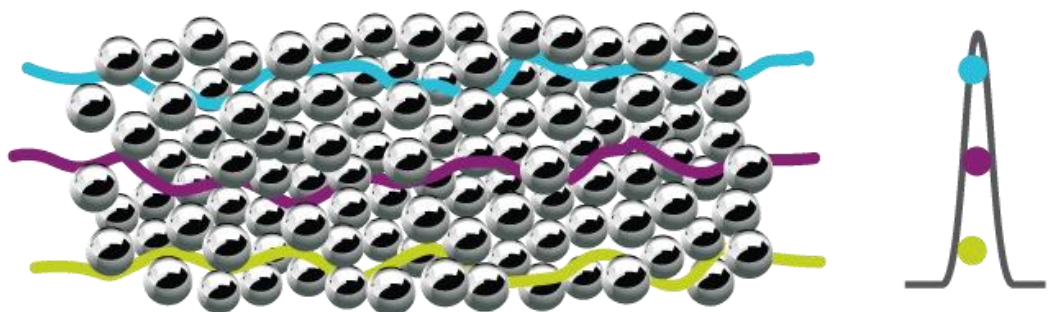
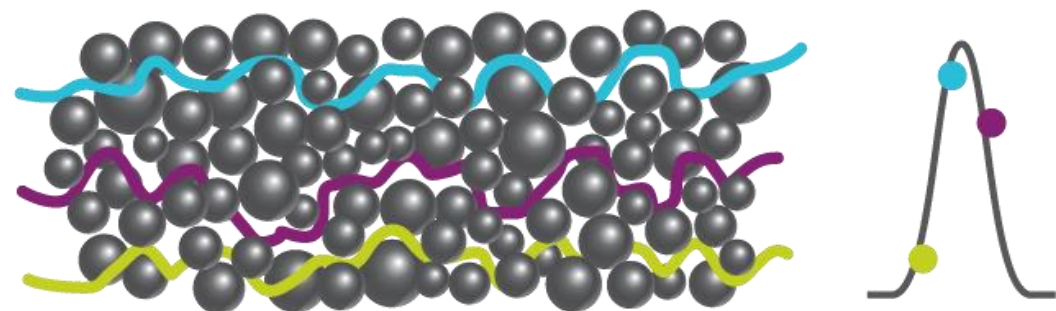
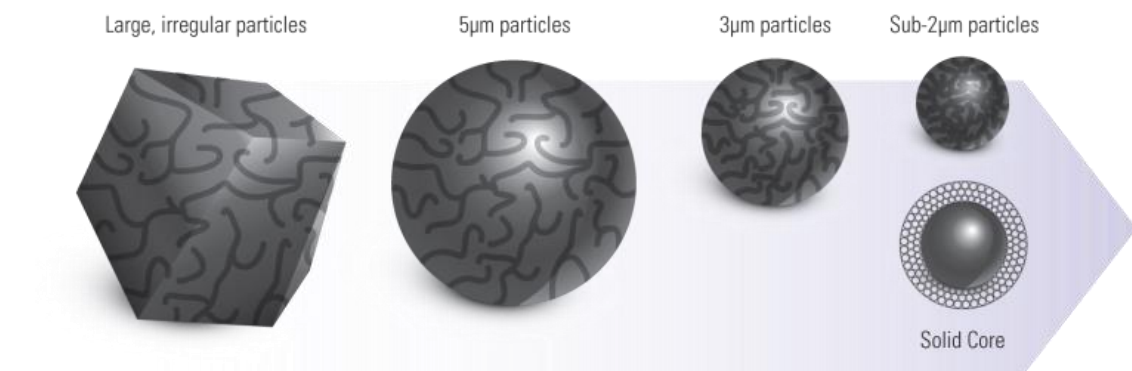
#### NanoLC

- EasySpray™
- Acclaim™ PepMap™
- PepSwift™

Chromatography consumables solutions



# Accucore Solid Core Columns



Diffusional path of analytes is limited by the depth of the outer porous layer

Control of particle diameter, standardized packing process

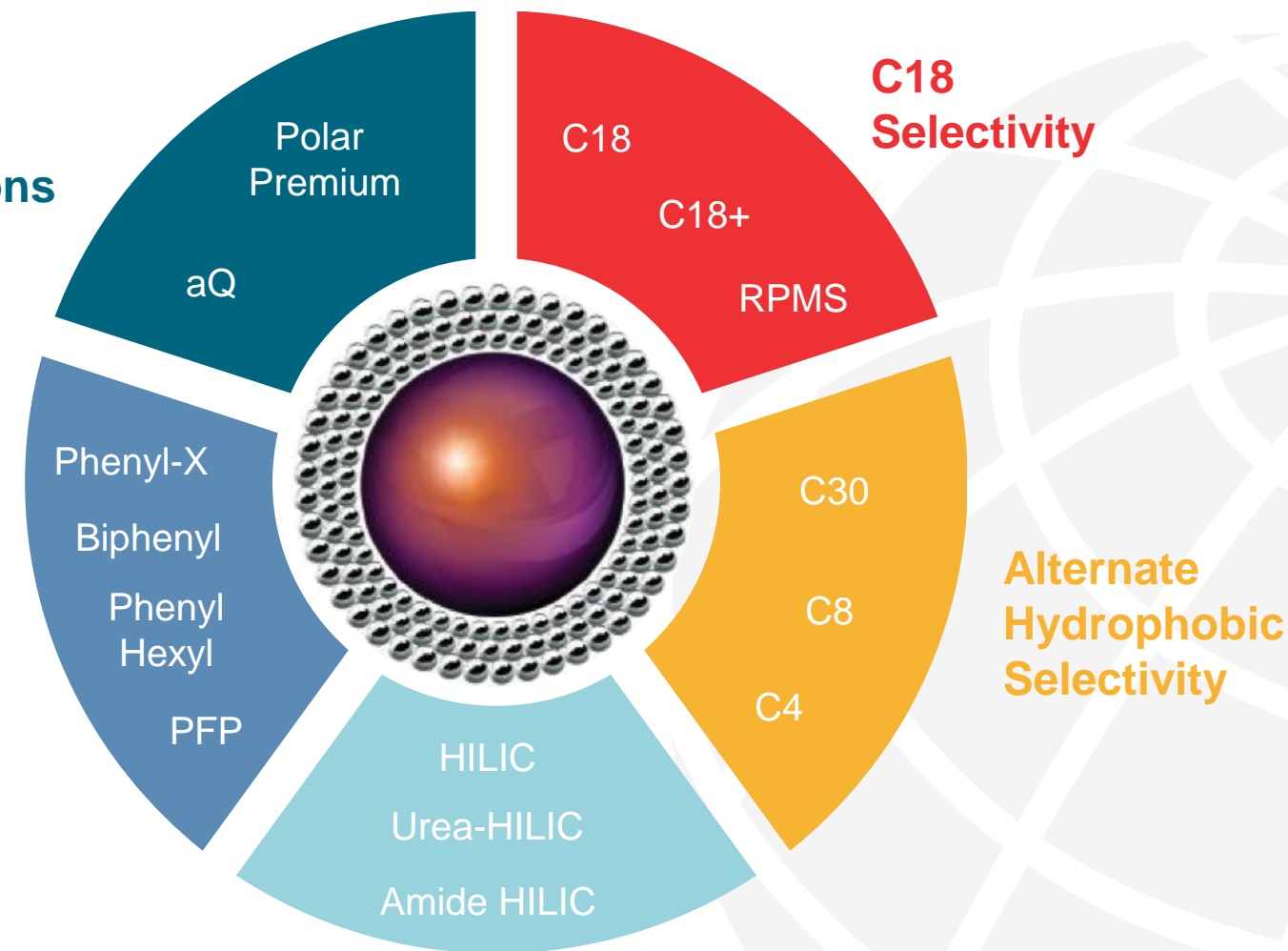
## Results:

- Sharper peaks
- Generate high speed analysis (1500 bar, 5mL/min)
- High resolution separations
- No excessive backpressure

# Solid core 14 different phase chemistries for speed and selectivity

**Polar Selectivity**  
**Stability in 100%**  
**aqueous conditions**

**Aromatic**  
**Selectivity**  
**Orthogonal**  
**to C18**



**HILIC Selectivity Polar Compound Retention**

**Accucore**

# GC consumable products



## A comprehensive portfolio from sample preparation/introduction to sample separation

- GC column family
- GC consumables
- GC equipment
- GC reagents

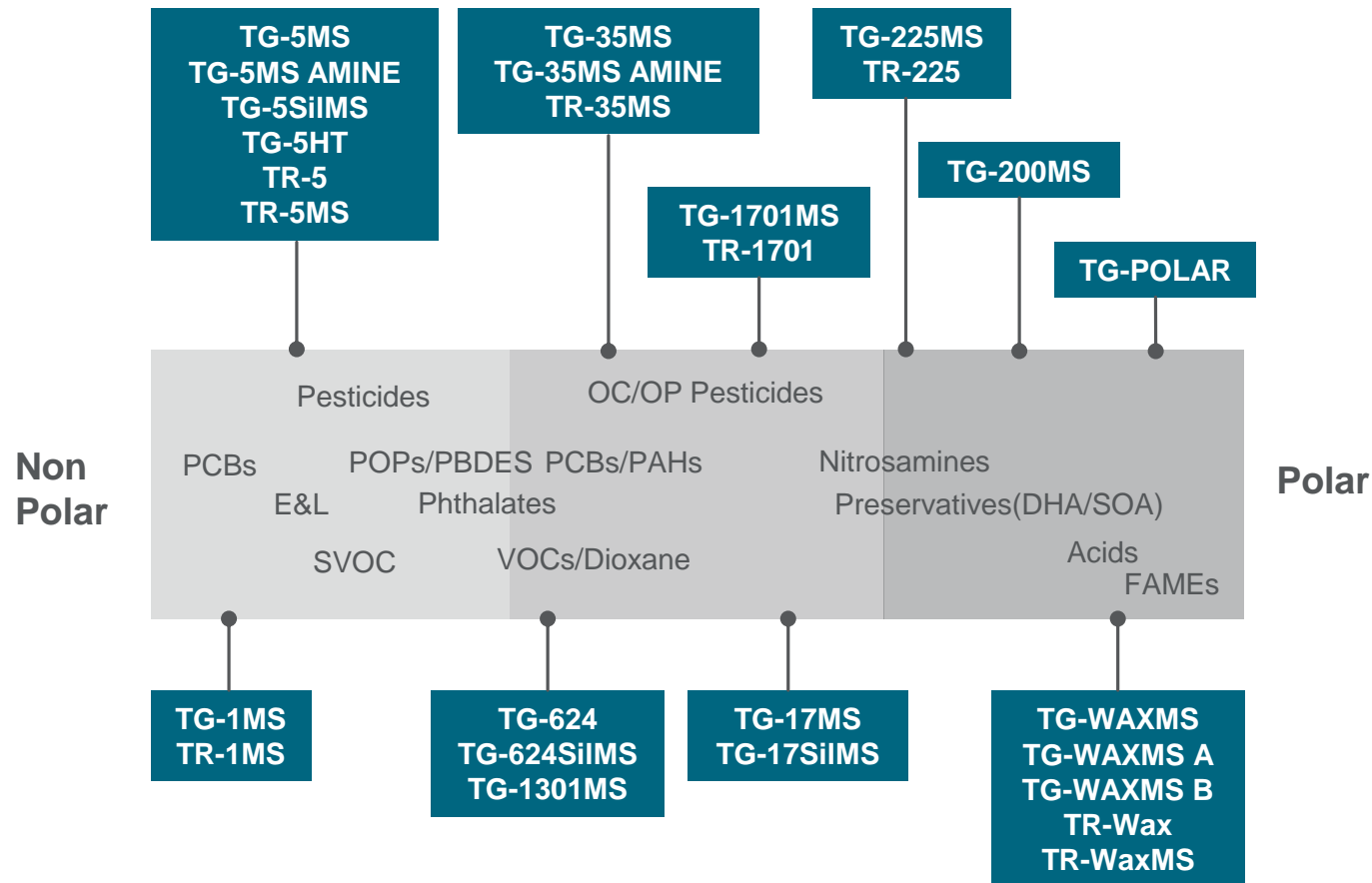
## These consumables ensure optimum system performance

- Without these, the GC or GCMS instrument would simply not function
- Incorrect parts result poor sensitivity, reproducibility and accuracy



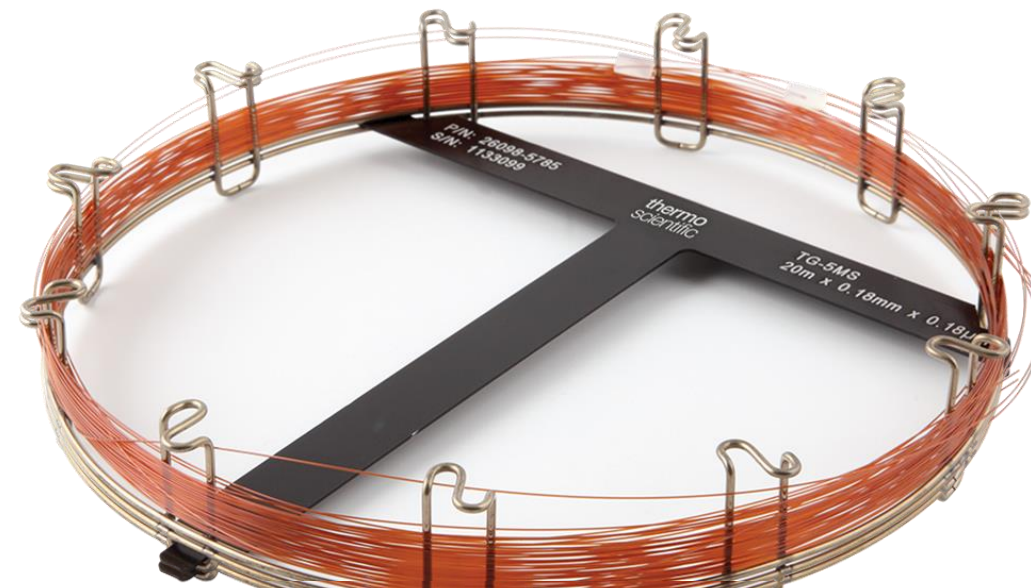


## Phases available from Non-Polar to Polar



## Specifically designed columns

- TG-PAH
- TG-PBDE
- TG-Dioxin
- TG-OCF
- TG-OPP
- TG-624
- TR-Pesticide
- TR-FAME
- TR-FFAP
- TR-524
- TR-8270
- TG-624SiIMS
- TG-VMS
- TG-XLBMS
- TG-VVOC B
- ...



# Catalog Individual Sections Downloads

- 2019-2021 Consumables Catalog
- Download the 2019-2021 Consumables Catalog here
- 2019/2021 Chromatography Consumables Catalog (Full)
- [Full Chromatography Consumables Catalog](#)
- Download individual sections here
- [Sample Preparation](#)
- [Sample Handling](#)
- [BioLC](#)
- [LC](#)
- [GC](#)



NEW chromatography consumables 2019-2021 catalog available to download now

Our NEW product catalog provides a comprehensive guide to Thermo Scientific™ chromatography consumables - giving you a complete overview of the broadest range of column chemistries, market leading sample handling and sample preparation to help you maximize your chromatography productivity and reproducibility.

Download [here](#)



**ThermoFisher**  
SCIENTIFIC

# Благодаря !