

The Welch logo, featuring the word "welch" in a lowercase, sans-serif font with a blue-to-white gradient, is positioned inside a teal diamond shape in the top-left corner of the slide.

# 2019

## **Brief Introduction of Welch Materials**

Clare Chen  
International Sales Marketing Manager





welch

# Contents

**I**

**Company Introduction**

**II**

**Operation Philosophy**

**III**

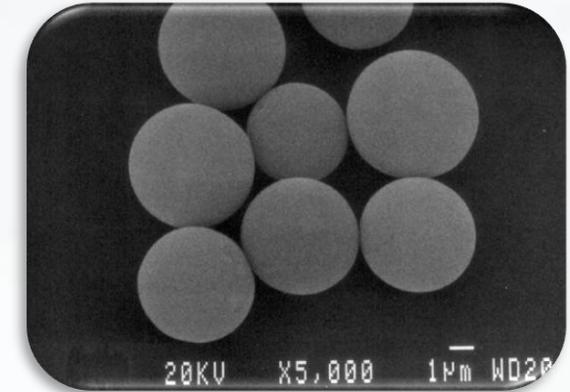
**Other Products**



# Welch Materials, Inc. – The Largest Column Manufacturer in China



- Welch Materials, Inc. was established in 2003 in Shanghai, China.
- Welch Materials develops and manufactures Chromatography consumables including HPLC columns, SPE columns, GC columns, Flash columns and chromatographic media.
- **Our Core Strength:**  
Particle surface modification science and techniques





02

# Welch Group



Welch Group



Welch  
Materials(Shanghai),  
Inc.

Welch  
Materials(Zhejiang),  
Inc.

Welch Materials, Inc.

Welch Materials  
India, Pvt. Ltd.

Headquarter  
Sales and marketing  
Center

Factory  
Chromatography  
Consumables

US  
Sales Center

India  
Sales Centre

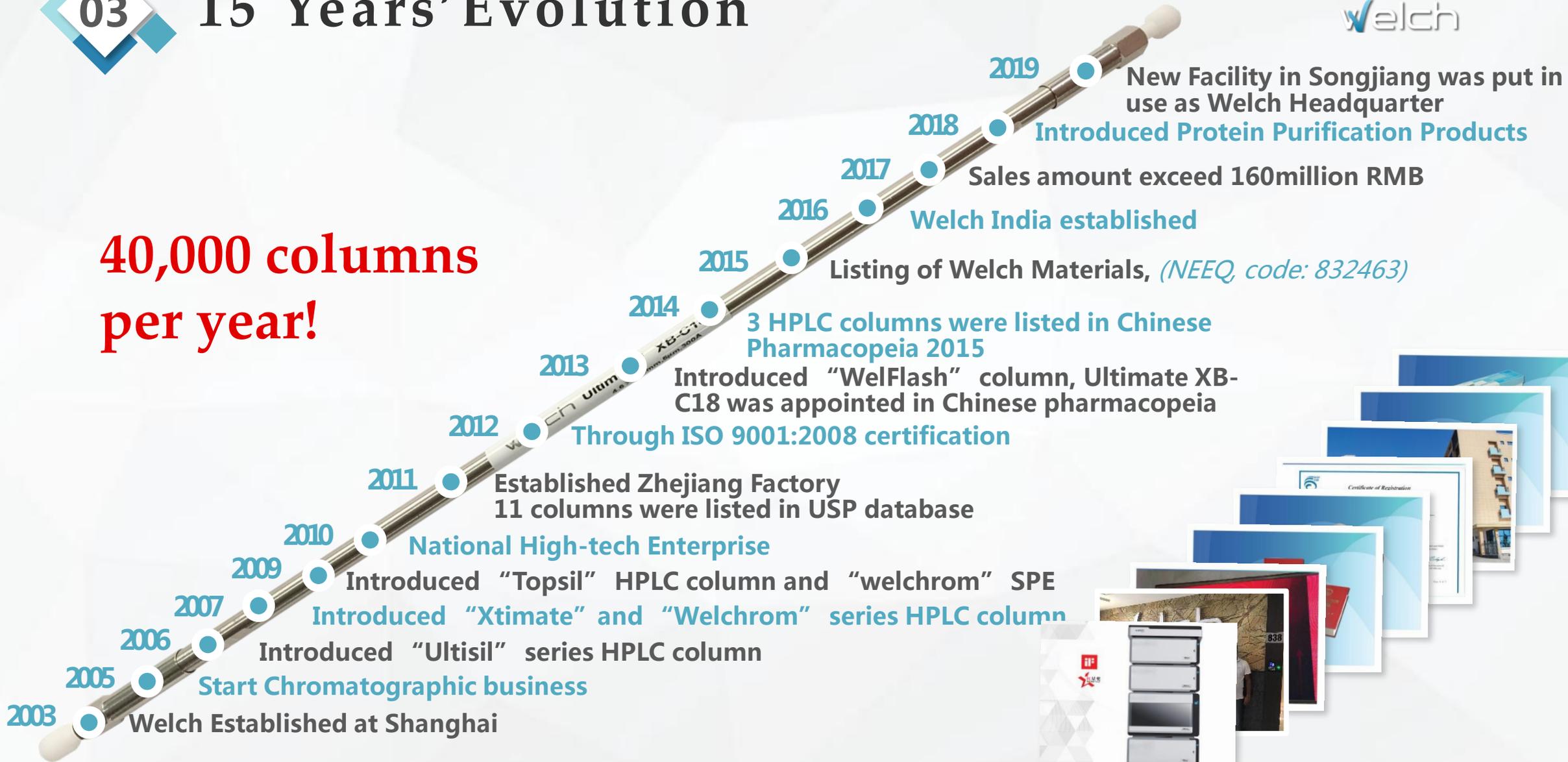




# 15 Years' Evolution



**40,000 columns  
per year!**



04

# More Than 3000 High Quality Customers





# Welch Honors



## Welch Columns Listed in USP Database

- ❑ Ultisil AQ-C18
- ❑ Ultisil XB-C18
- ❑ Ultisil XB-C8
- ❑ Ultisil XB-Phenyl
- ❑ Xtimate C18
- ❑ Xtimate C8
- ❑ Topsil C18
- ❑ Ultisil LP-C18
- ❑ Ultisil XS-C18
- ❑ Ultisil PFP
- ❑ Ultisil Plus C18
- ❑ Ultisil XB-CN



ISO 9001  
Certification



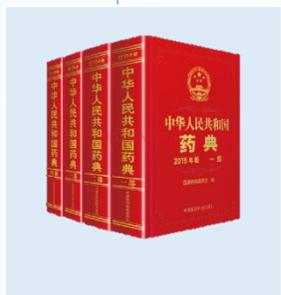
S&T SMEs



High-tech  
Enterprise  
R&D Center



Hi-tech  
Enterprise



## Chinese Pharmacopoeia

### Appointed Welch Columns

- ❑ Belladonna Tablets & Tincture
- ❑ Acarbose
- ❑ Zolmitriptan Tablets

### Recommended Welch Columns

- ❑ Erythrocin
- ❑ Etimicin sulfate
- ❑ Diclofenac sodium eye drops
- ❑ Propofol Emulsion injection

## 7 Patents

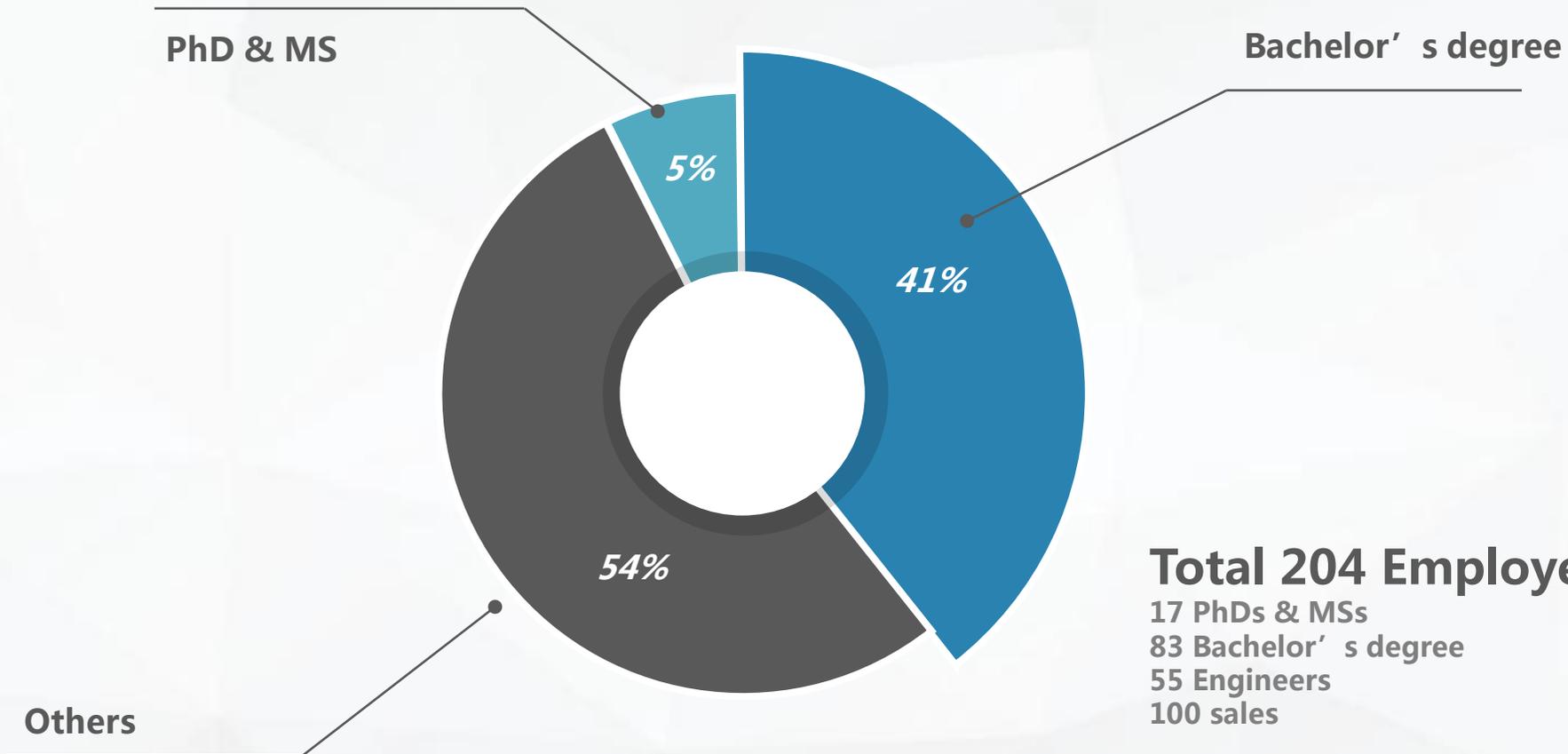
- ❑ Wide pH range packing materials
- ❑ Core-shell packing materials
- ❑ Preparation of packing materials to separate basic compounds
- ❑ A preparation method of chiral columns
- ❑ A preparation method of one silica packing materials
- ❑ A preparation method of packing materials for water soluble polymer and protein
- ❑ A preparation method of fully porous silica





06

# Our Team



## Total 204 Employees

- 17 PhDs & MSs
- 83 Bachelor's degree
- 55 Engineers
- 100 sales



# 07 Our Priorities in Making Columns and Serving Customers



**Table IX: Factors considered when selecting an HPLC column supplier**

Factor	Respondents (Normalized %)		
	2007 (1)	2009	2011
Column-to-column reproducibility	21	21	19
Column lifetime	16	17	15
Price	12	14	13
Reputation of company	14	12	9.6
Column plate number	8.7	9.1	9.1
Technical assistance	5.7	5.8	6.7
Variety of phases available	4.5	4.0	6.4
Tailing factor	6.3	5.4	5.0
Column pressure drop	nq*	2.6	3.6
Speed of delivery	3.0	2.0	3.0
Column hardware design	3.9	6.2	2.9
Availability of column catalog	4.2	2.8	2.4
Column warranty	1.5	1.0	2.0
Promotions/gifts	0.3	0.6	1.0

\*nq means not queried in past surveys

Survey by Ron  
Majors for LCGC  
Magazine

# Packing Material Quality Control-----SRM870

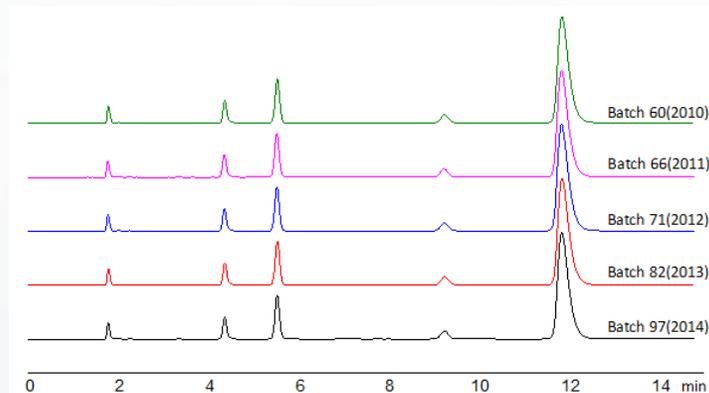


National Institute of Standards & Technology

## Certificate of Analysis

Standard Reference Material® 870

Column Performance Test Mixture for Liquid Chromatography<sup>1</sup>



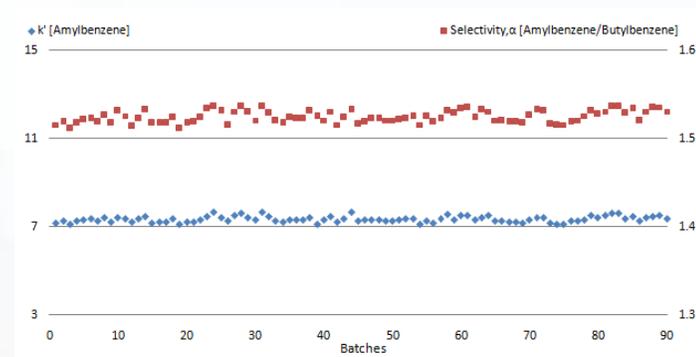
Column: Ultisil™ XB-C18, 5µm, 120Å, 4.6×150mm  
 Mobile phase A: 20% 5mM potassium phosphate buffer, pH 7.0  
 Mobile phase B: 80% Methanol  
 Flow rate: 1.0ml/min Injection vol.: 5µl  
 Sample mix: Uracil, Toluene, Ethylbenzene, Quinizarin and Amitriptyline

### What:

- ◆ Mixture of 5 standard materials for quality control in stationary phase manufacturing

### How:

- ◆ Higher  $T_f$  for Amitriptyline, higher unshielded silanol content on silica surface
- ◆ Higher  $T_f$  for Quinizarin, higher residual metal ion content
- ◆ Higher capacity factor of ethylbenzene, higher carbon loading on silica



Column: Ultisil™ XB-C18, 5µm, 120Å, 4.6×150mm  
 Mobile phase: Methanol/Water ( v/v ) 80/20  
 Flow rate: 1.0ml/min  
 Sample mix: Uracil, Toluene, Ethylbenzene, Butylbenzene and Amylbenzene  
 Detection: UV254nm

The Welch logo is located in the top-left corner, featuring the word "welch" in a white, lowercase, sans-serif font inside a teal diamond shape. There are several other teal and dark teal diamond shapes scattered across the slide as decorative elements.

welch

A large, stylized diamond shape is centered on the slide. It is composed of four thick, overlapping segments: a light teal segment at the top, a dark teal segment at the bottom, and two medium teal segments on the left and right sides. The center of the diamond is white and contains the text "Part II" and "Contents".

# Part II

Contents

# Operation Philosophy



# Our Operation Philosophy



- 7 Patents in bonding chemistries
- More than 90 bonding phases

- 20-30% lower than well-known brands

- Strong R&D team
- Excellent pre-sales and post-sales service
- Rich application database

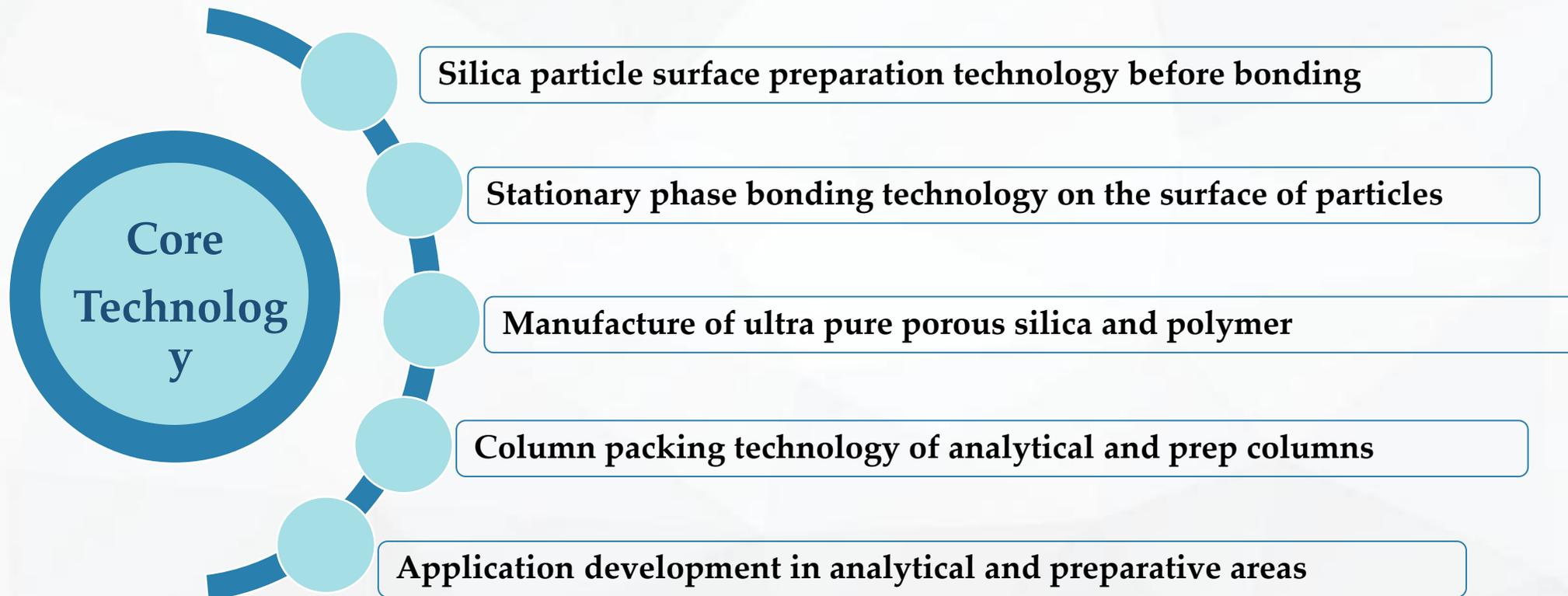


02

# Welch Materials Core Competencies



-Ultimate Performance







# New Products are Introduced Each Year

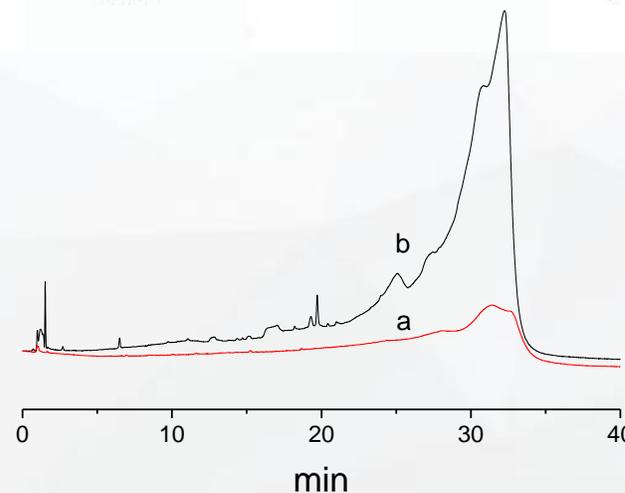
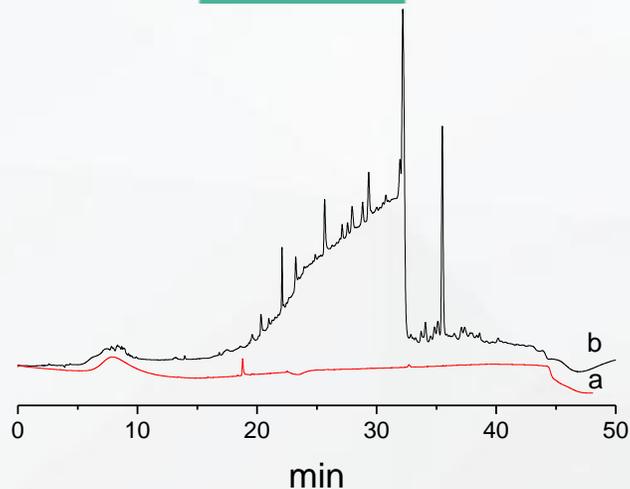
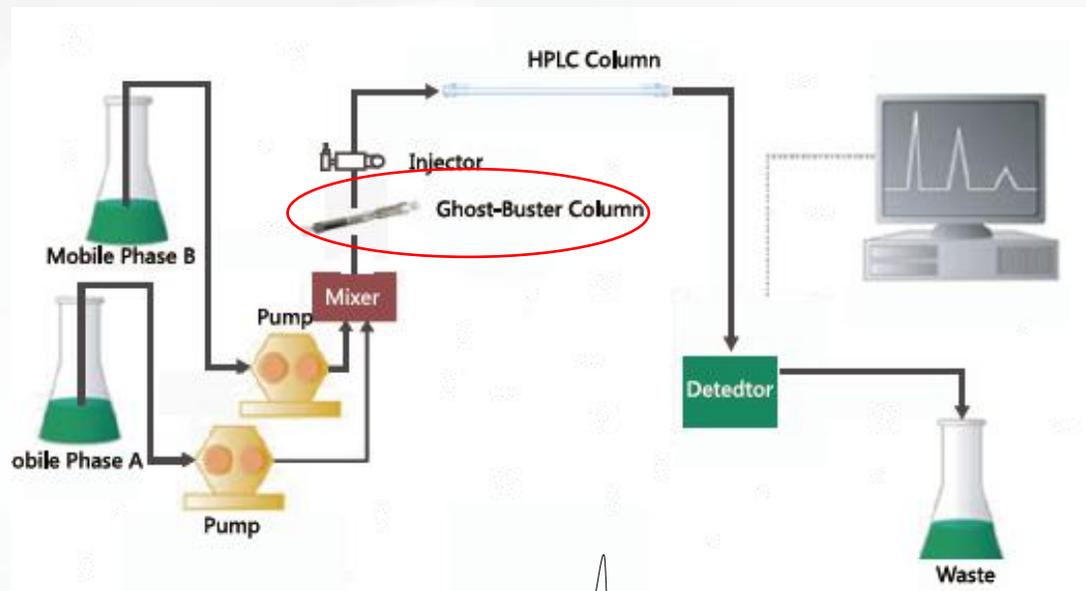
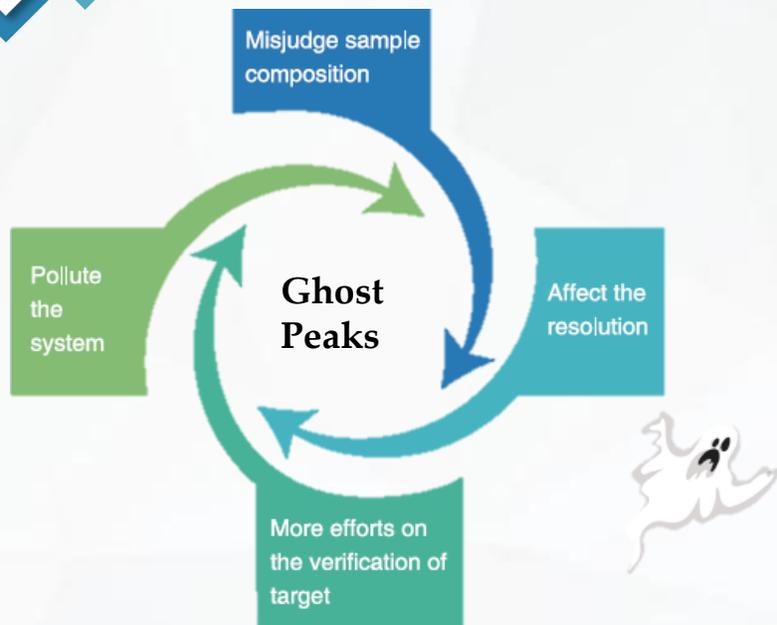


05

# Ghost Buster Column



welch

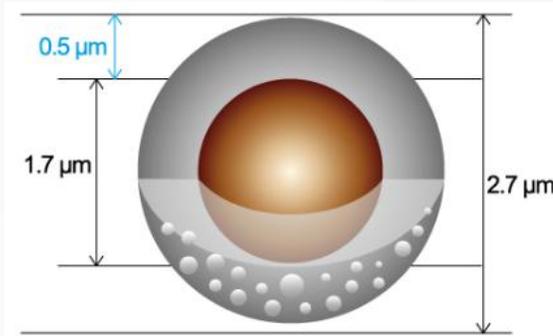


Chromatograms without Ghost-Buster column (b) and with Ghost-Buster column (4.6×50mm) (a)

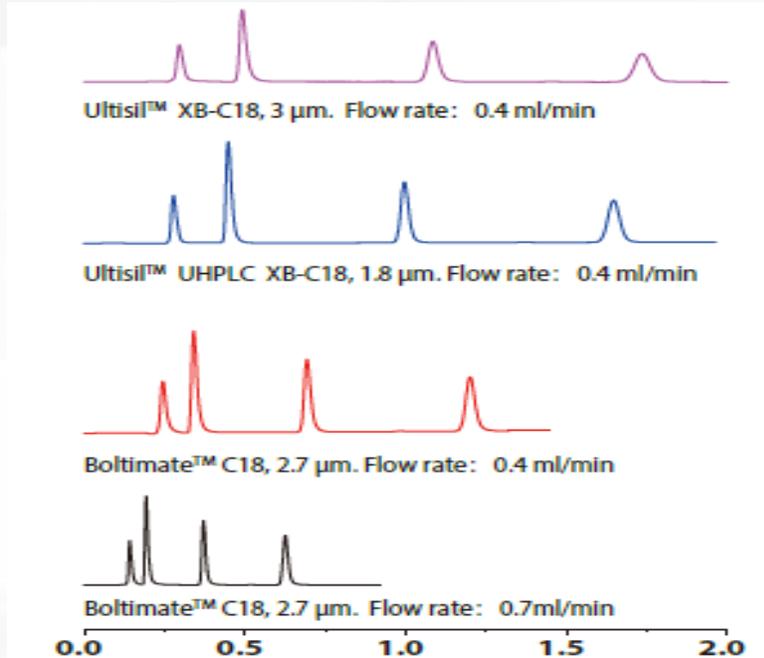
06

# Boltimate Core-Shell HPLC Column

welch



China Patent ID:  
201210026956.X



- Sub-2 μm efficiency (~200000 p/m) and ultra-high resolution at much lower back pressure
- Ultra-fast separation
- Compatible with both HPLC and UHPLC system
- A variety of bonding phases provide different selectivity, while maintaining excellent peak shape and lot-to-lot reproducibility

Gel-filtration

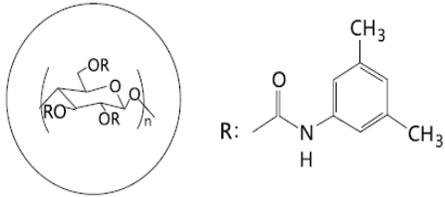
Ion-exchange

Hydrophobic

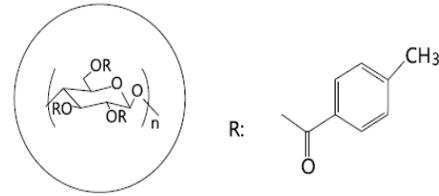
Affinity

- ◆ G-25 Medium, best choice for desalination and buffer exchange
- ◆ CM, DEAE, SP and Q filters, optional for polar protein purification
- ◆ Phenyl, Octyl and Butyl filters, optional for hydrophobic protein purification
- ◆ All kinds of affinity filters, such as Ni and Protein A resin
- ◆ Various specifications of pre-packed columns, with 1/16" joint to compatibility with FPLC system, such as AKTA system

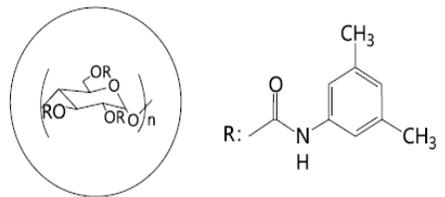




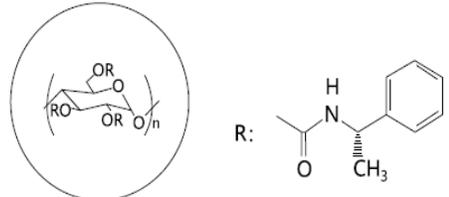
**Cellu-D/Cellu-DR:**  
Cellulose tris (3,5-  
dimethylphenylcarbamate)  
coated on a silica support



**Cellu-J/Cellu-JR:**  
Cellulose tris (4-  
methylbenzoate)  
coated on a silica support

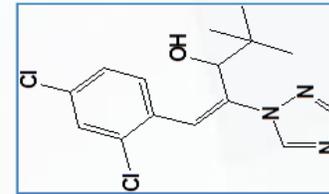


**Amy-D/Amy-DR:**  
Amylose tris (3,5-  
dimethylphenylcarbamate)  
coated on a silica support



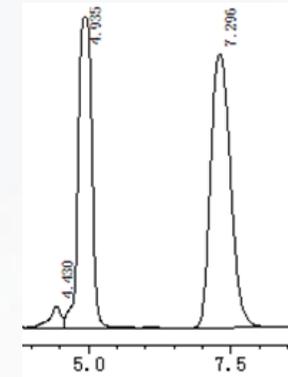
**Amy-S/Amy-SR:**  
Amylose tris[(s)- $\alpha$ -  
methylphenyl carbamate]  
coated on a silica support

### Diniconazole

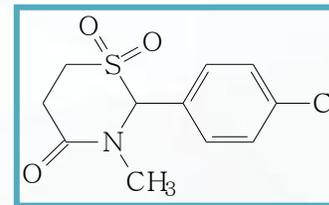


**Amy-D**

**Rs**  
**4.81**

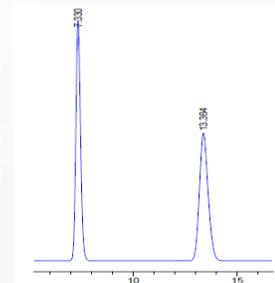


### Chlormezanone Tablets

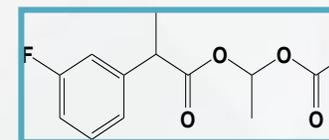


**Cellu-  
D**

**Rs**  
**10.43**

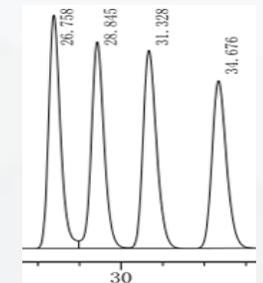


### Flurbiprofen Axetil



**Amy-D**

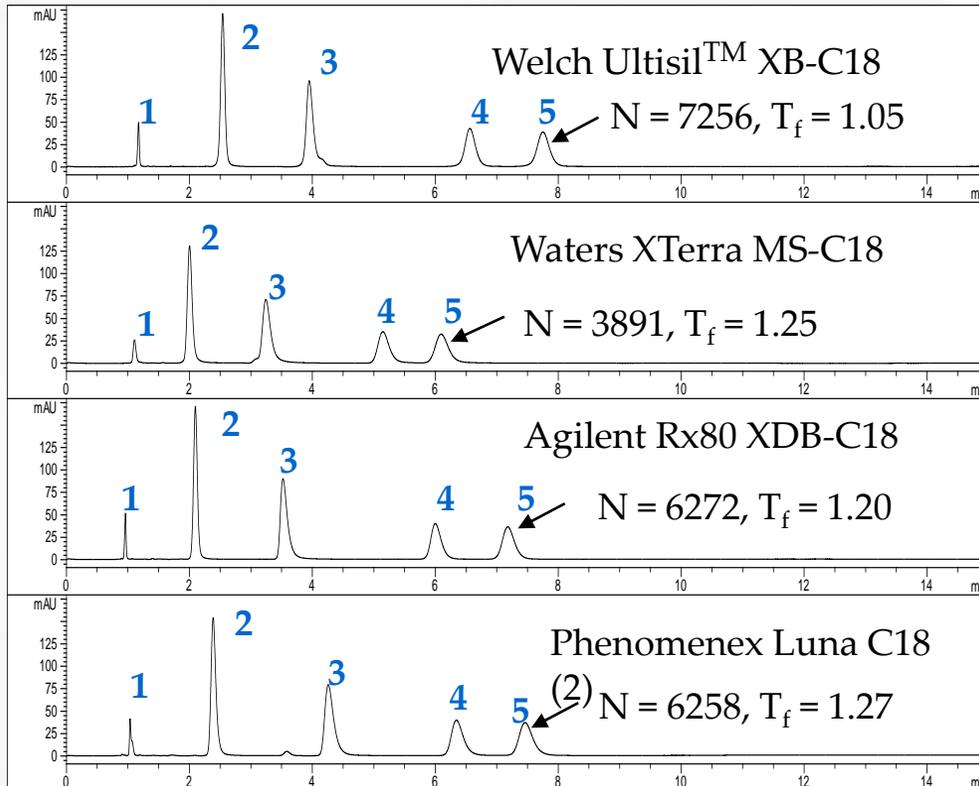
**Rs**  
**1.98**  
**2.18**  
**2.74**



09

# Compete with Name Brands

## - Reasonable Price



Column: 4.6 x 100 mm, 5  $\mu$ m  
Mobile: 80% MeOH/20% 20mM phosphate, pH 7.0

Flow rate: 1 ml/min

Detector: 215 nm

Temperature: 25  $^{\circ}$ C

Sample:

- 1) Uracil
- 2) Propranolol
- 3) Nortriptyline
- 4) Imipramine
- 5) Amitriptyline

Note:

- N – the higher, the better
- $T_f$  – the closer to 1.0, the better

**Regular C18 Competes Favorably Against Name Brands**



# Welch Help Customers Solve Problems Welch

## -Best Service

### ■ Example: Analysis of Azithromycin

Requirements :

- ✓ R of each peaks is greater than 1.2
- ✓ RT of Azithromycin between 30-40min
- ✓ S/N>10.0
- ✓ Mobile phase of high pH salt is not good to HPLC Column

### Azithromycin Related Substances

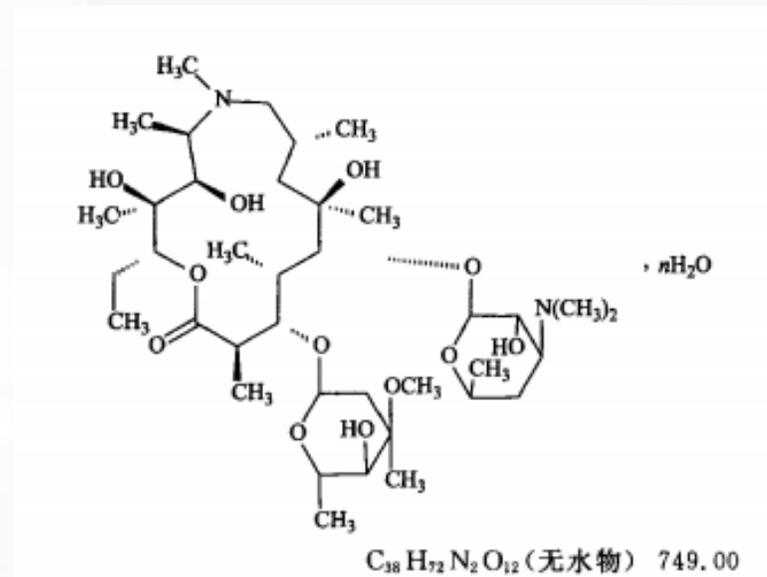
Impurity Q and R : Erythromycin A Iminoether

Impurity I : 3'-N-demethylazithromycin

Impurity J : 13-O-descladinosylazithromycin

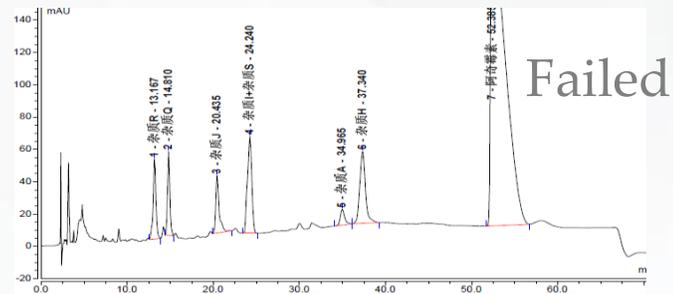
Impurity H : 3'-N-[[4-(acetylamino)phenyl]sulphonyl]3'-N-demethylazithromycin

Azithromycin B : (3-deoxyazithromycin(azithromycin B))

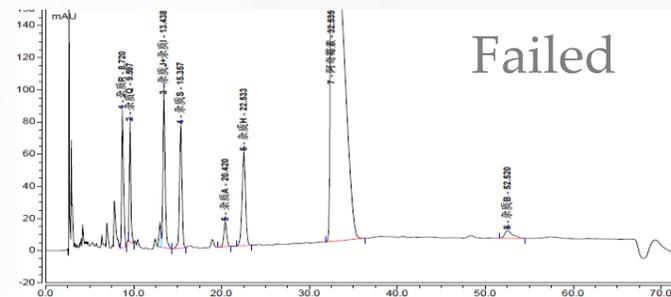


# Result of Azithromycin by Different C18 from Welch

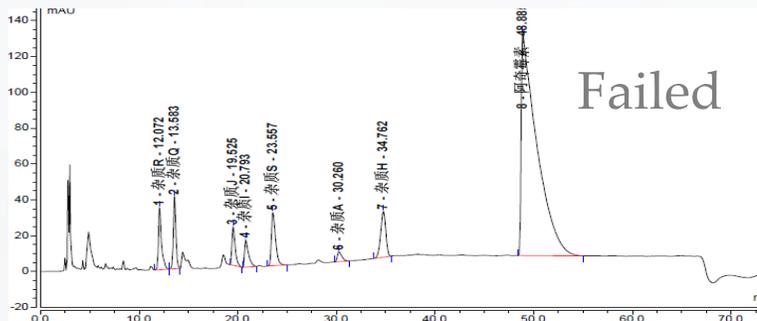
Method : Same with Chinese pharmacopeia 2015



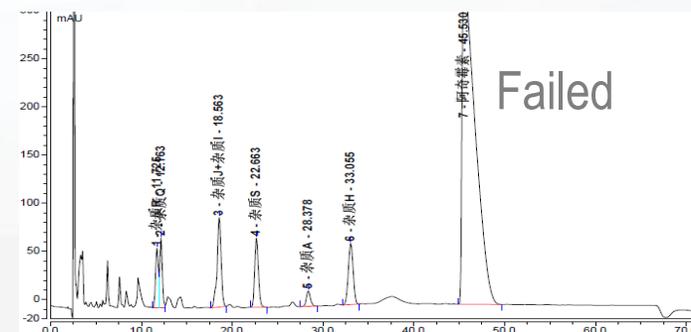
Column : Ultisil LP-C18, 5um, 4.6×250mm  
 Flow Rate: 1.0ml/min  
**R of Impurity I from Impurity S is less than 1.20**  
**Impurity B disappeared, S/N <10.0**



Column : Ultisil plus-C18, 5um, 4.6×250mm  
 Flow Rate: 1.0ml/min  
**Notes: Impurity S and Impurity I are overlapped**



Column : Topsil C18, 5um, 4.6×250mm  
 Flow Rate: 1.0ml/min  
**Impurity B disappeared, S/N <10.0**



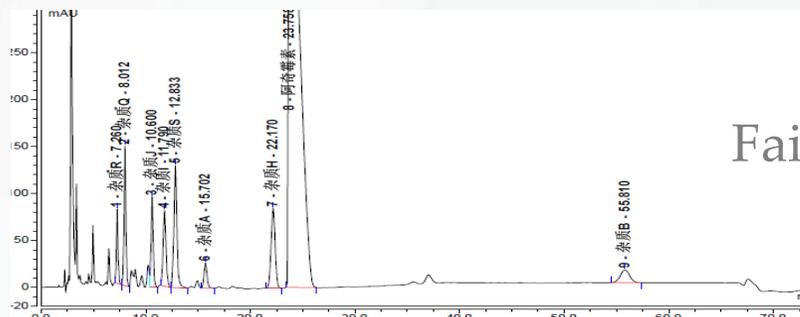
Column : Ultisil LP-C18, 5um, 4.6×250mm  
 Flow Rate: 1.0ml/min  
**R of Impurity I from Impurity S, R of Impurity Q from Impurity R are less than 1.20, Impurity B disappeared**



# Result of Azithromycin by Different C18 from Welch



Method : Same with Chinese pharmacopeia 2015

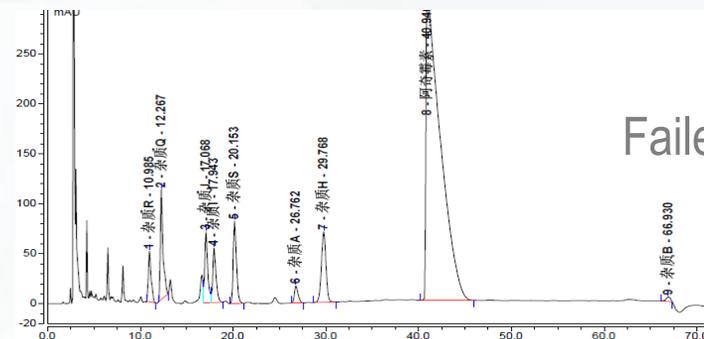


Failed

Column : Ultisil Polar-RP, 5um, 4.6×250mm

Flow Rate: 1.0ml/min

Note: Peak order changed

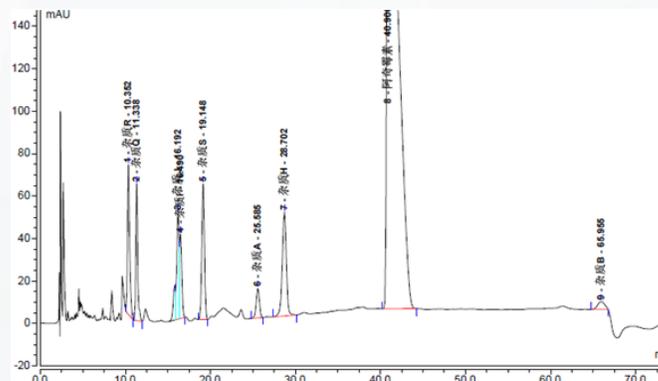


Failed

Column : Ultisil AQ-C18, 5um, 4.6×250mm

Flow Rate: 1.0ml/min

Note: Impurity B appeared in gradient fluctuations

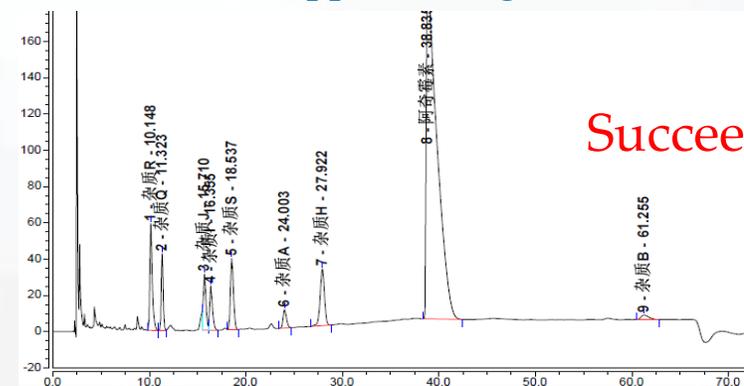


Failed

Column : Xtimate C18, 5um, 4.6×250mm

Flow Rate: 1.0ml/min

Note: R of impurity J from I < 1.2, Impurity B appeared in gradient fluctuations



Succeed!

Column : Ultisil AQ-C18, 5um, 4.6×250mm

Flow Rate: 1.1ml/min

Note: meets the requirements of Azithromycin method only by adjusting flow rate to 1.1 mL /min

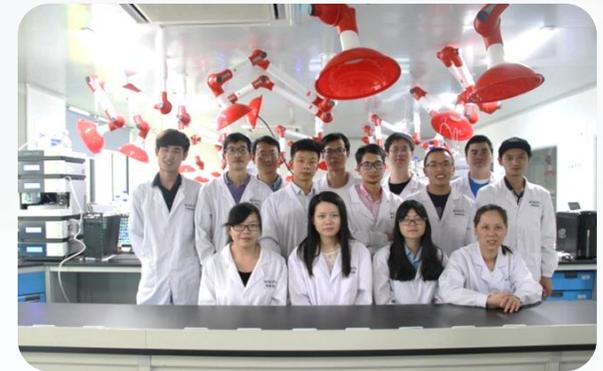
# 11

## Pre-sales and Post-sales Services



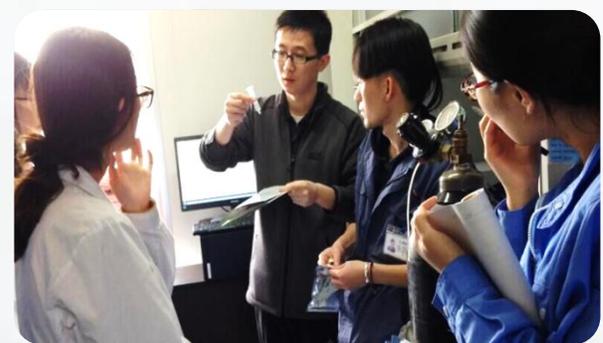
### ■ Pre-sales

- ✓ Trial Columns
- ✓ Technology Consulting
- ✓ Methods Provided  
(over 1500 applications)



### ■ Post-sales

- ✓ Free Technical Training  
(over 140 training/year)
- ✓ Technology Consulting  
(Facebook, Twitter, LinkedIn, Wechat)
- ✓ Methods Developing



The Welch logo is located in the top left corner, featuring the word "welch" in a white, lowercase, sans-serif font inside a teal diamond shape. There are several other teal and dark teal diamond shapes scattered across the page as decorative elements.

welch

A large, stylized diamond shape is centered on the page. It is composed of four thick, blue segments that meet at the corners, forming a white diamond in the center. The segments are slightly offset from each other, creating a sense of depth and movement.

# Part III

Contents

# Other Products

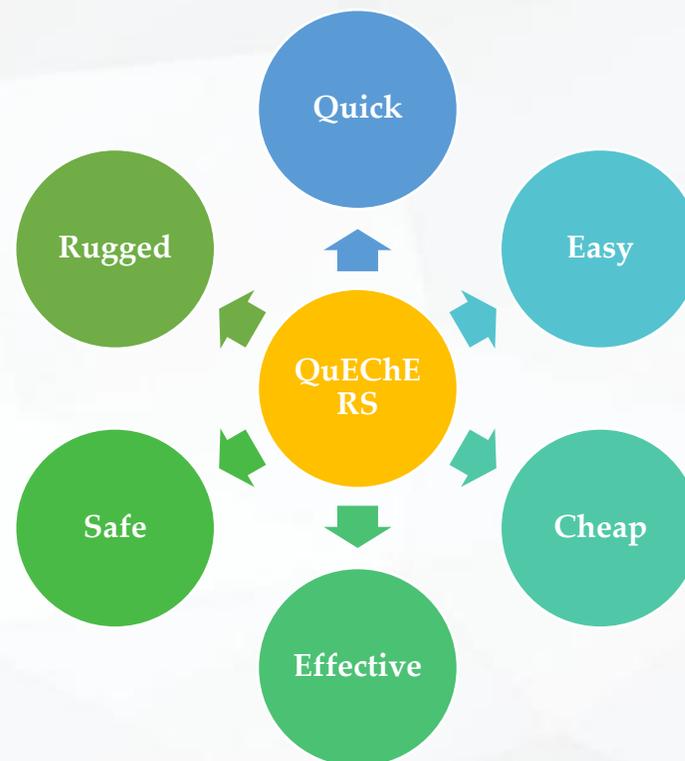


# 01 Welchrom SPE column



## Benefits of SPE

- ◆ Switch sample matrices to forms that are more compatible with chromatographic analyses
  - ◆ Concentrate analytes for increased sensitivity
  - ◆ Remove interferences to simplify chromatography and improve quantitation
  - ◆ Protect analytical column from contaminants
-



## Welchrom<sup>®</sup> QuEChERS

— The Best Choice of Sample Preparation for Pesticide Analysis

- Save time and money for your sample preparation
- High quality, excellent accuracy and reproducible results
- Lower impurity from inside source and prevent outside contamination





# 03 Packing materials



Whole  
Purification  
Solution

From  
Analysis to  
Preparation





04

# Wisys 5000 HPLC system

welch

RELATED TO HONOR



Red Star  
Design



# 05

## Preparative HPLC system



Simple Design



Reliable Performance

Analytical/  
Semi-Prep  
Model

### ■ Pump

Flow Setting Range	0.001~9.999 ml/min, 0.001ml/min step length
Flow Value Error	± 0.3%
Flow Value Precision	0.05%
Gradient Error	± 0.5%
Gradient Precision	0.3%
Pressure Range	≤ 42 Mpa (316LPump head)

### ■ VWD

Detector System	190-700nmWavelength
Wavelength Coverage	190nm-700nm, Step Length 1nm
Wavelength Accuracy	1nm
Wavelength Precision	±0.1nm
Dynamic Baseline Noise	±1.0×10 <sup>-5</sup> AU
Dynamic Baseline Drift	2.0×10 <sup>-4</sup> AU/h
Minimum Detectable Concentration	3×10 <sup>-9</sup> g/ml

### ■ Performance

Qualitative Repeatability	≤0.1 %
Quantitative Repeatability	≤0.2 %

06

# Chromatography Consumables

welch





# ООО "ВнешБиоТорг" - официальный дистрибьютор Welch в России

**ООО «ВнешБиоТорг»**-поставщик оборудования и расходных материалов (сывороток и питательных сред) для культуральных клеточных технологий, биологических реакторов и ферментёров, мешалок, пластиковых мешков и ёмкостей для перемешивания, транспортировки и хранения питательных сред и биологических жидкостей, химических реактивов, химического сырья, стандартов и реактивов для оснащения фармацевтических и биотехнологических производств, производственных и научно-исследовательских лабораторий, центров контроля качества. Сегодня ВНЕШБИОТОРГ эксклюзивный дистрибьютор в России известных европейских и американских, производителей и **официальный дистрибьютор Welch в России.**

## **Контакты:**

Адрес: Москва, Костомаровский пер, дом 3, стр.2, офис 201

Тел: +7 (495) 760-05-07

Электронная почта: [order@vneshbiotorg.ru](mailto:order@vneshbiotorg.ru)

welch



# Thank you

