



**Introduction to  
Thermo Scientific UHPLC World**

**●** The world leader in serving science

# Thermo Fisher Scientific

**Thermo**  
SCIENTIFIC



*life*  
technologies



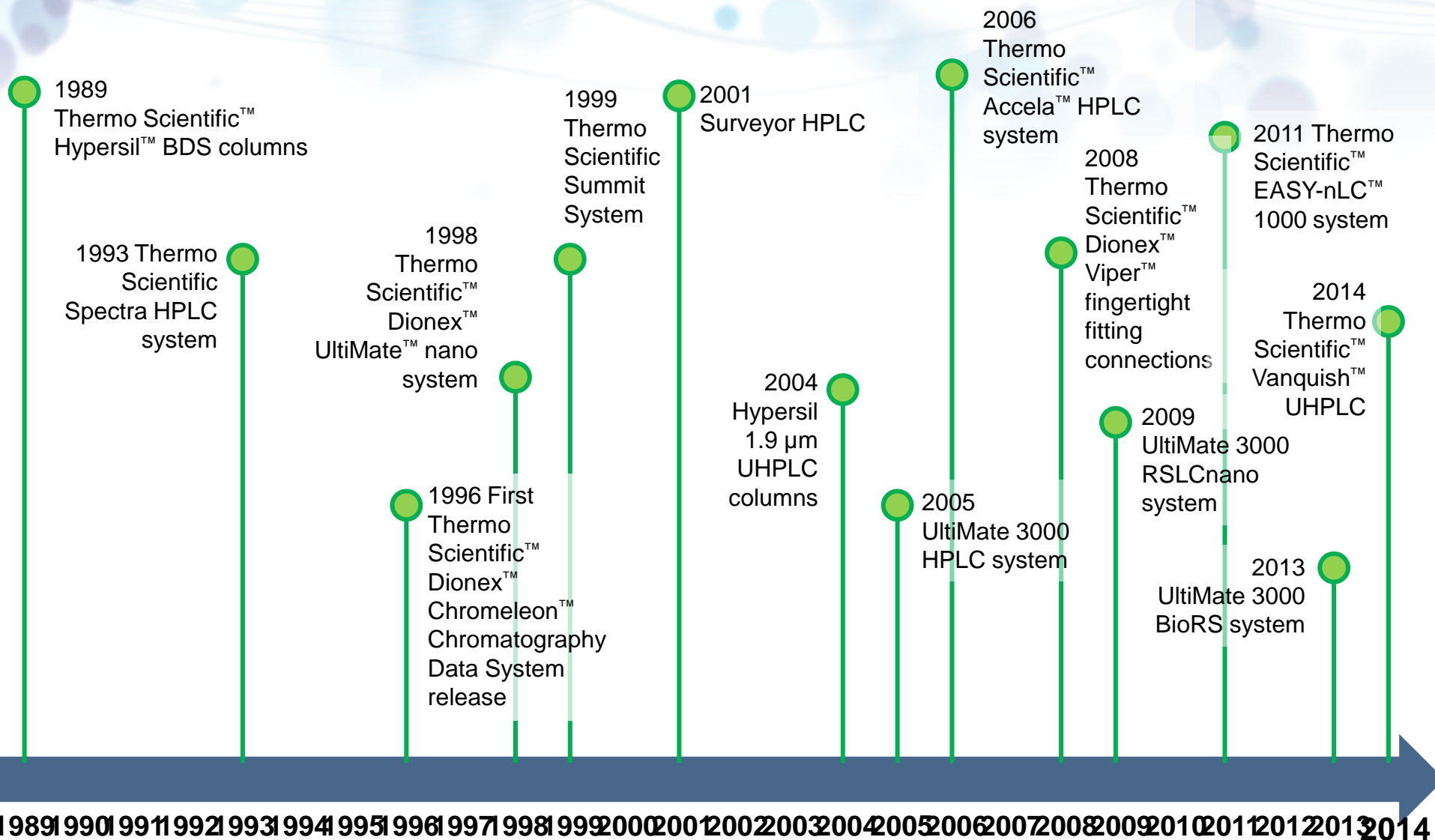
**F** Fisher Scientific



**Unity** Lab Services

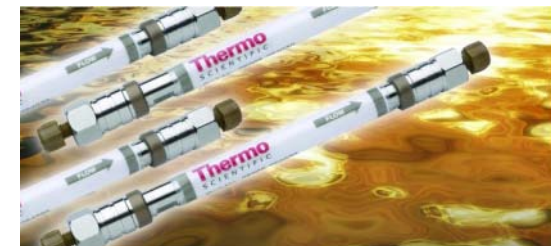


# Recapturing 25+ Years of HPLC and UHPLC



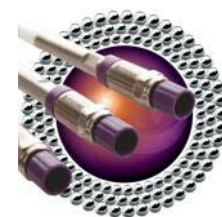
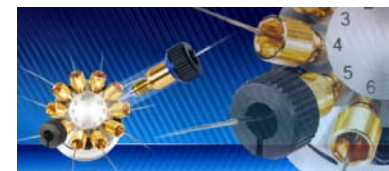
# Just a Few of the Early Innovations

- 1993 Spectra HPLC system
  - Modular but compact system
  - Available as stainless steel or inert HPLC
- 1998 UltiMate nano LC system
  - First dedicated nano LC system in the world
- 2004 Hypersil 1.9  $\mu\text{m}$  UHPLC columns
  - Sub-2  $\mu\text{m}$  particles for highest efficiency and speed



# And Some More Recently

- 2005 UltiMate 3000 HPLC Platform
  - Covering isocratic to multi-dimensional LC
  - From nano LC to semi-preparative
- 2006 Accela UHPLC system
  - First UHPLC system up to 1250 bar
- 2008 Dionex Viper fingertight fitting connections
  - Re-usable and fingertight UHPLC connection
- 2011 Thermo Scientific™ Accucore™ 2.6 μm columns
  - Full range of selectivities in UHPLC resolution and speed



# Thermo Scientific UHPLC Offerings



## Basic Automated

- Highly economic & reliable
- 620 bar UHPLC compatible
- Flow rates up to 10 mL/min



## Standard

- Highest flexibility with Dual solutions
- 620 bar UHPLC compatible
- Flow rates up to 10 mL/min



620 bar

## EASY-nLC/RSLCnano

- UHPLC systems for Nano/Cap/Micro range
- 20 nL/min – 50 µL/min up to 800 bar with RSLCnano
- 20 – 2000 nL/min up to 1000 bar with EASY-nLC system
- Direct flow (splittless) delivery



Up to 1000 bar

## RSLC/BioRS

- Advanced workflows with Dual systems
- 1000 bar up to 5 mL/min
- 200 Hz data rate
- Binary and Quaternary UHPLC systems



## XRS

- Highly LC/MS optimized quaternary UHPLC system
- Pressures up to 1250 bar
- Flow rates of up to 2 mL/min
- Open Autosampler available



1250 bar

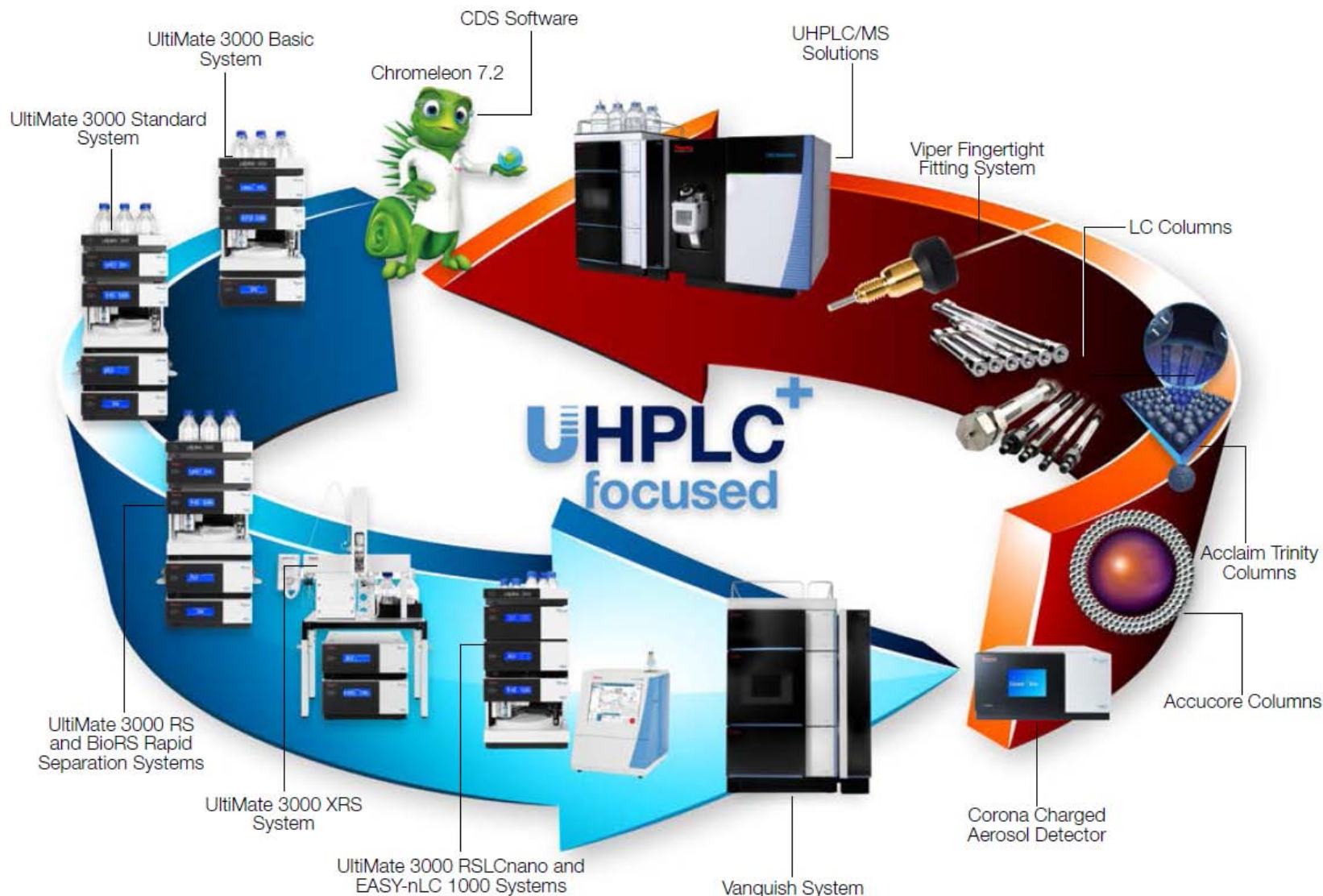
## Vanquish UHPLC

- Highest pressure capability up to 1500 bar
- Lowest system dispersion by optimized system setup and flow path
- Extended sample capacity: 4 sample containers in the sampler
- Space for 9 racks or deep well plates/ 20 shallow well plates in the charger
- Two thermostating modes to face diverse application challenges
- Unmatched detection sensitivity and linearity up to 3 AU



1500 bar

# Thermo Scientific Chromatography Solutions



# Vanquish System – Reimagining UHPLC

## The Vanquish system can ...



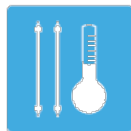
### ... drive the separation with more power

- 1500 bar (22,000 psi) of pump pressure at flow rates up to 5 mL/min
- Industry-leading flow and gradient precision
- 2 x 3 solvent channels



### ... handle the sample with more accuracy

- Up to 23 well plates for 8832 samples
- Excellent injections up to 100  $\mu$ L in 0.01  $\mu$ L increments
- Automation of workflows with barcode reading



### ... control the separation with more confidence

- 2 thermostating modes
- 5  $^{\circ}$ C to 120  $^{\circ}$ C temperature range
- Active pre-heating



### ... detect the analyte with more sensitivity

- Linear up to 3000 mAU
- Noise levels down to  $\pm 3$   $\mu$ AU
- Lowest dispersion with Thermo Scientific™ LightPipe™ technology



Build on years of experience in  
**listening,**  
**imagining,**  
**designing,**  
**manufacturing** and  
**supporting**  
LC solutions

**...do more!**



# Thermo Scientific Vanquish UHPLC System



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