

Continuous separation of submicron particles by using continuous flow rotor for ultracentrifuge

Preparative Ultracentrifuge model CP100WX / P32CT Continuous Flow Rotor

The P32CT continuous flow rotor for the ultracentrifuge can continuously separate and refine samples ranging from one to ten liters in quantity.

Following report shows test result of continuous separation of two kinds of submicron particles that differ in density by 0.03g/cm³ by density gradient solution.

Description

1. Centrifugation conditions

Centrifuge:	CP100WX ultracentrifuge
Rotor:	P32CT continuous flow rotor (Rotor capacity: 430 ml)
Rotor speed:	30,000 rpm (Maximum RCF: 90,000 xg)
Sample injection rate:	70 ml/min
Centrifugation time:	approx. 1 hour
Sample volume:	3 L
Sample particle:	Mixture of 2 kinds of particles (2 ml of each)
Latex particle 1	Particle size = 150 nm, Density = 1.05 g/cm ³ , Sedimentation coefficient = 625 S
Latex particle 2	Particle size = 402 nm, Density = 1.08 g/cm ³ , Sedimentation coefficient = 7,182 S

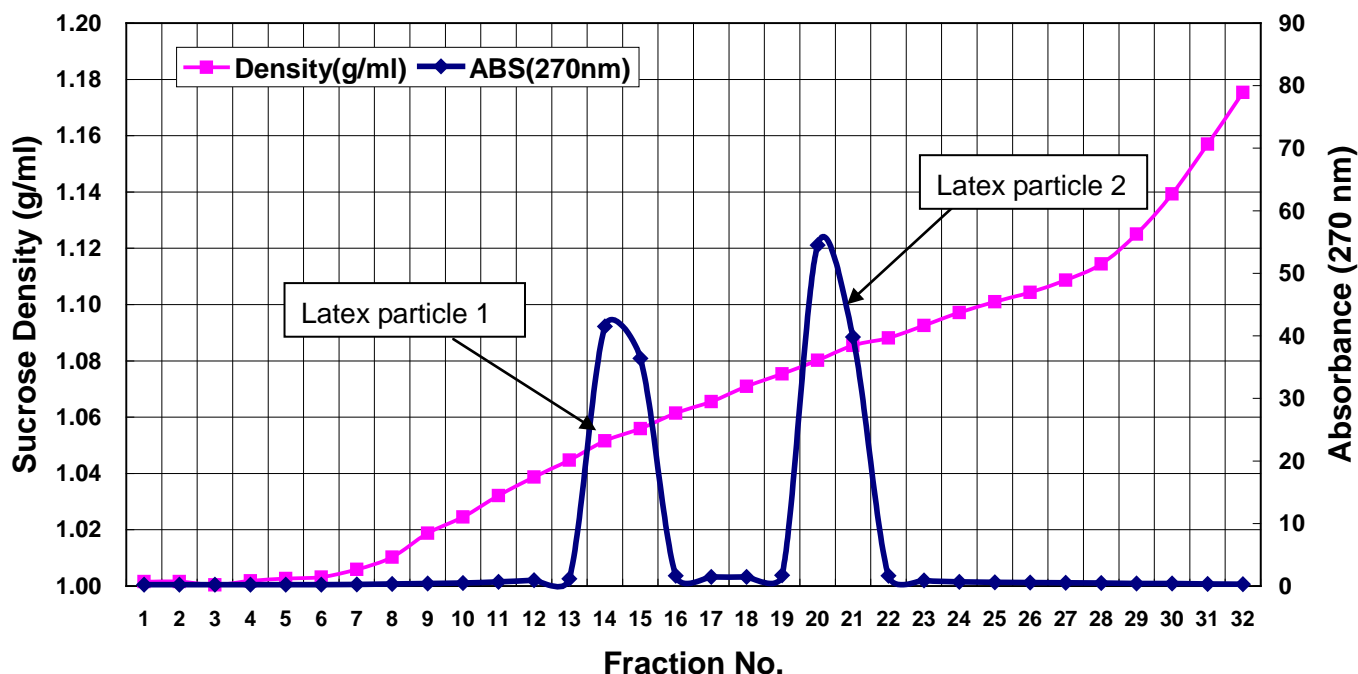
Sample solution: 0.01% Triton X-100 solution

Density gradient solution

- (1) Distilled water: 130 ml
- (2) 17% (w/w) sucrose: 200 ml (Density = 1.0675 g/cm³)
- (3) 30% (w/w) sucrose: 130 ml (Density = 1.1268 g/cm³)
- (4) 45% (w/w) sucrose: 30 ml (Density = 1.2028 g/cm³)

2. Test results

The Separation Test of P32CT



- (1) After continuous separation, the sample in the rotor was fractionated by 15 ml each into 32 fractions.
 - (2) We could assume the Latex particle 1 has been separated into the fraction No. 14 and 15 and the Latex particle 2 has been separated into the fraction No. 20 and 21.
 - (3) The recovery of the Latex particle 1 (fraction No. 14 and 15) and the Latex particle 2 (fraction No. 20 and 21) was approx. 90%.
3. Conclusion

The P32CT continuous flow rotor can continuously separate and concentrate two kinds of latex particles that differ in density by only 0.03 g/cm^3 into fractions corresponding to their densities.

Process volume by P32CT rotor is one to ten liters per centrifugation. This rotor has recently been used for pilot production of new influenza vaccine and so on. In addition, large-scale continuous flow ultracentrifuge model CC40 is available for 10 times larger volume process (10 to 100 liters) than the P32CT.

Device appearance



CP100WX ultracentrifuge



P32CT continuous flow rotor

If you have any inquiry of this application or products, please contact us through our web site.

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Hitachi Koki Co., Ltd. Life-Science Instruments Division

Shinagawa Intercity TowerA 2-15-1 Konan, Minato-ku Tokyo 108-6020 JAPAN
Tel: (81) 3-5783-0665
Fax: (81) 3-5783-0771

*The latest information is available on our web site.

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