

Micro Coulter Counter

()
 micro chip
 micro chip
 5% . Coulter counter
 counter 가
 counter 가
 counter
 가 counter
 sheath flow , micro chip 2 3
 sheath flow ,
 3 sheath flow V
 step channel

Device

V step sheath flow coulter counter Fig. 1

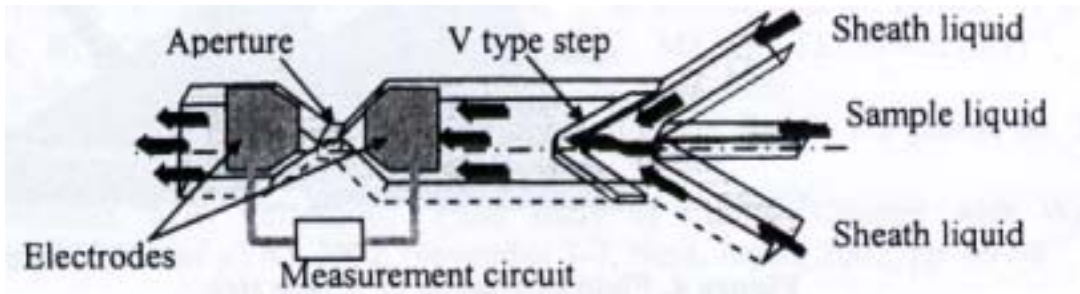


Fig. 1. Structure of V type step sheath flow device

Fig. 1 sheath liquid channel
 sample liquid 2 sheath flow V step
 가 Sheath flow sample liquid V step
 sheath liquid sample liquid flow
 sample liquid flow 가
 sample liquid 가 point

Device 가

Si 3 sheath flow device Fig. 2
 Si 가 V step ICP-RIE 2
 V step SEM Fig. 3
 Sheath flow channel 가 200 μm 가 40 μm V
 step 가 72 μm 20 μm

Si anodic bonding

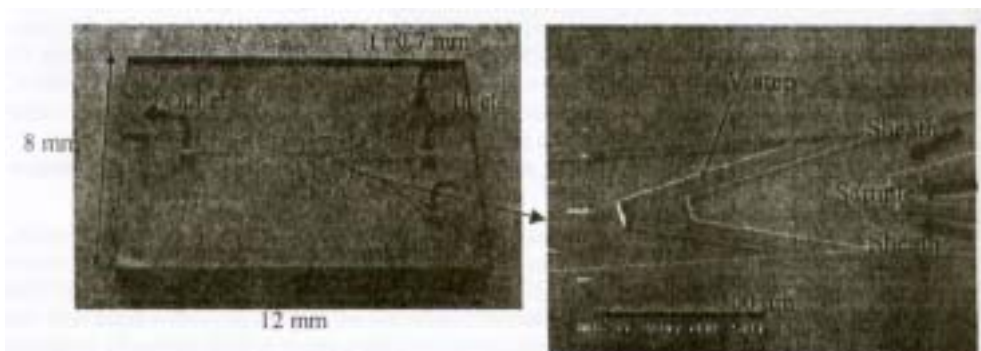


Fig. 2. Photograph of 3-dimensional sheath flow

Fig. 3. SEM Photograph of V type step

EXPERIMENTAL

Sheath flow가 , 2 sheath flow, 3 sheath flow
 . Sample liquid 0.9 % NaCl
 polystyrene latex bead . Sheath liquid 가 0.9% NaCl
 . -50 kPa 가 .
 가 oscilloscope .
 simulation Fig. 4 .

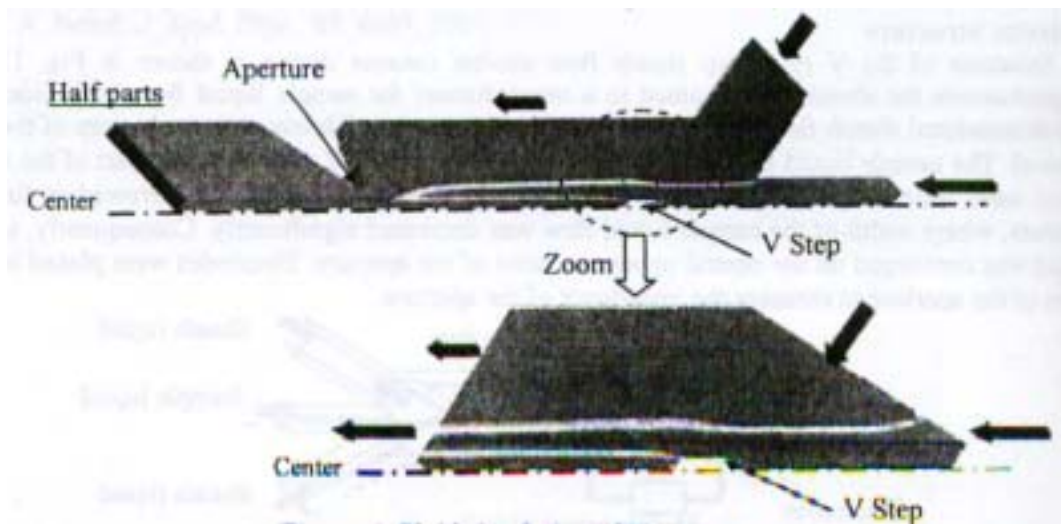


Fig. 4. Fluid simulation of V type step

RESULTS & DISCUSSION

Fig. 5 sheath flow . Sheath flow가
 18 % (Fig. 6) 2 Sheath flow 15 % 3 sheath
 flow 5 % (Fig. 7). 3 sheath flow device
 . Simulation 3 sheath flow device sample
 liquid channel 1/3 가 5 %

device

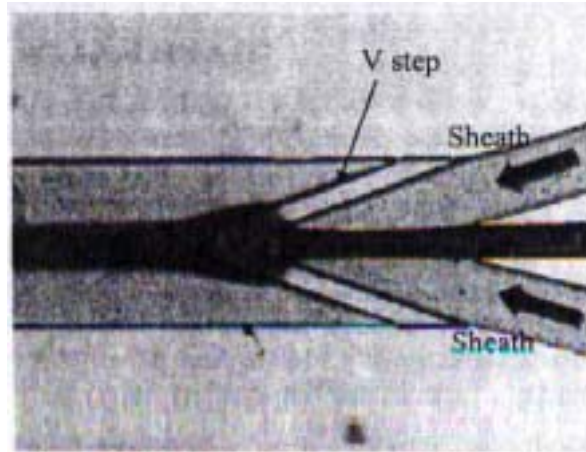


Fig. 5. Photographs of the sheath flow

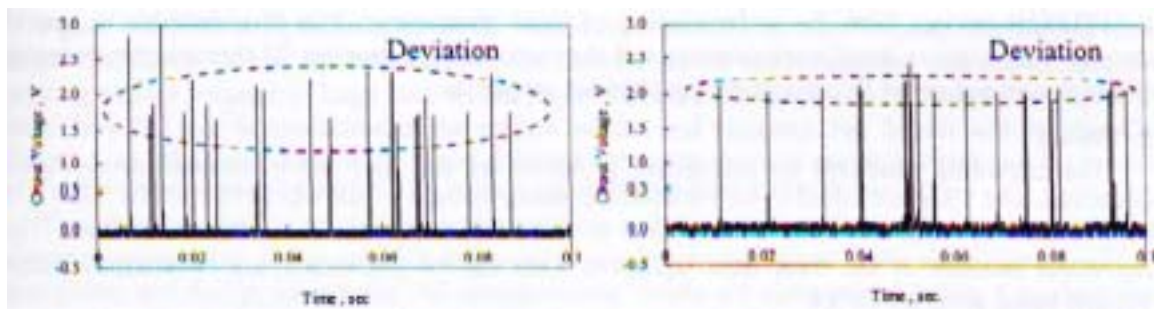


Fig. 6. Measurement of 8 μm particles without sheath flow

Fig. 7. Measurement of 8 μm particles with V type step sheath flow

3 sheath flow device

portable