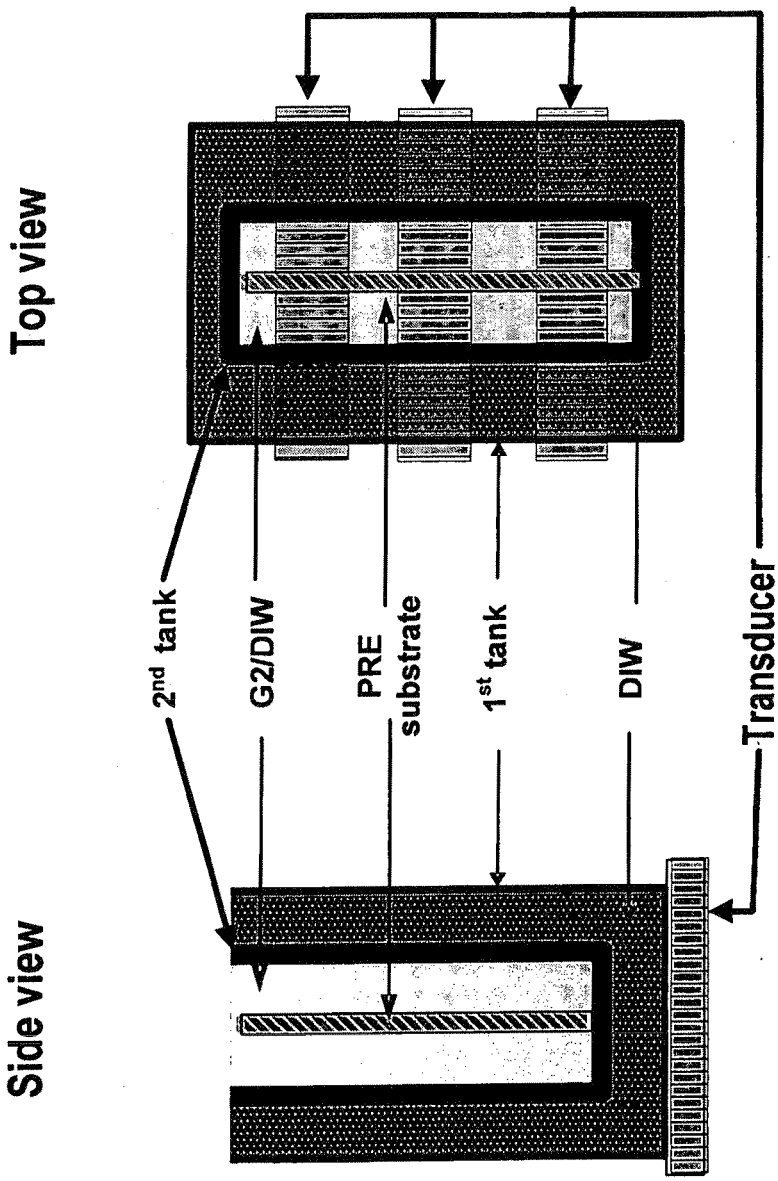



Figure 1A

Figure 1B

Figure 2A

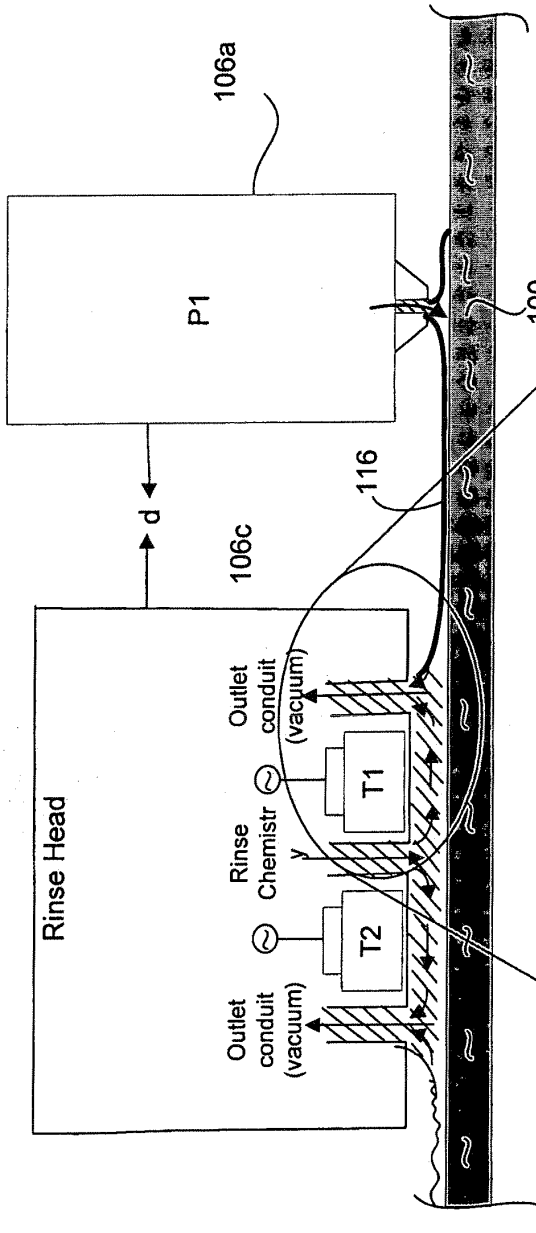
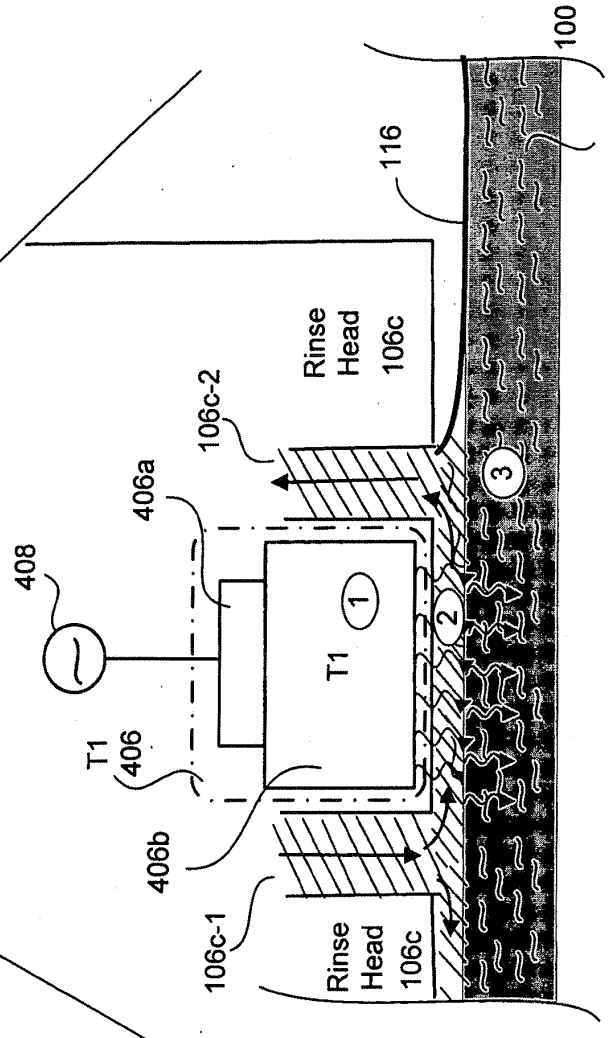



Figure 2B



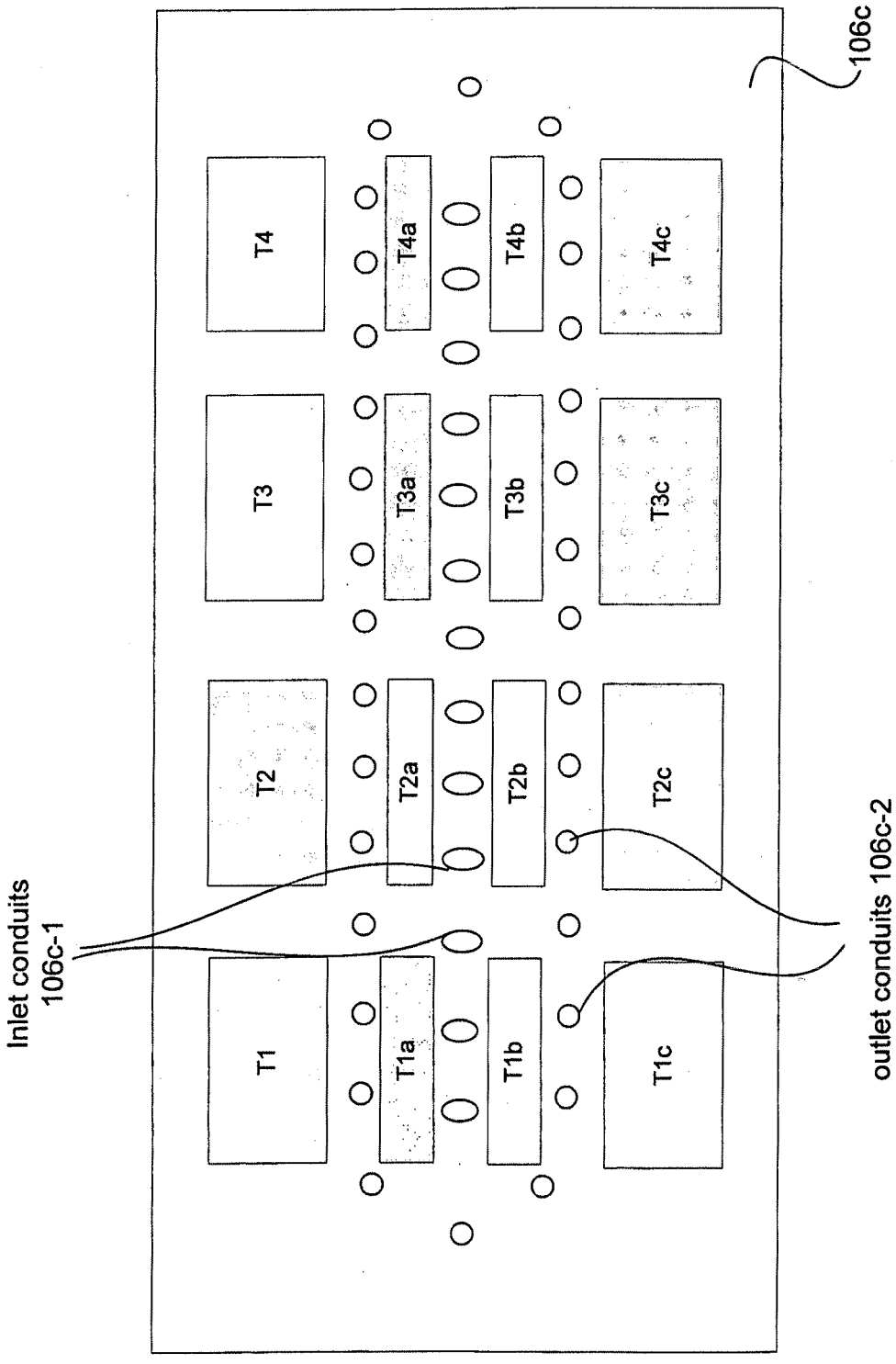

106c
Inlet conduits
106c-1
outlet conduits 106c-2
T1
T1a
T1b
T1c
T2
T2a
T2b
T2c
T3
T3a
T3b
T3c
T4
T4a
T4b
T4c

Figure 2C

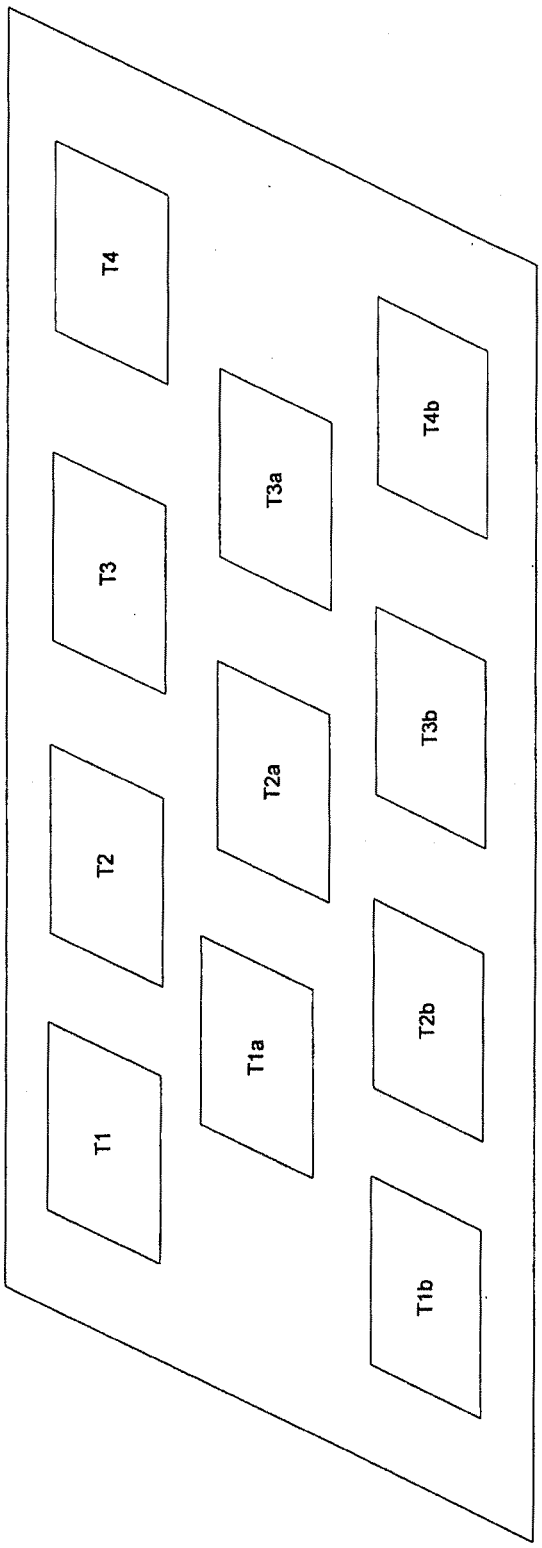



Figure 2D

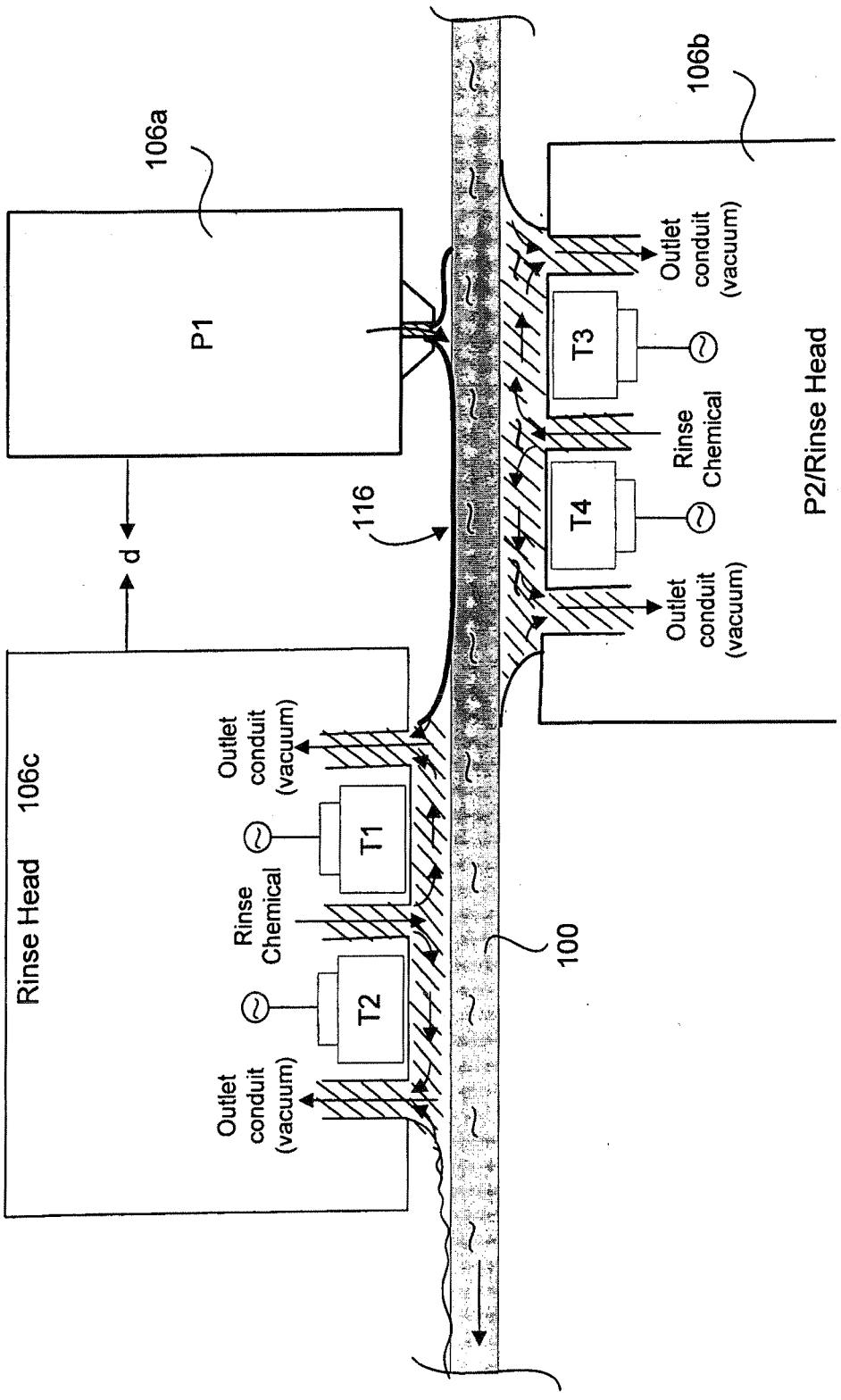

106a
P1
106b
P2/Rinse Head
d
116
Rinse Head
106c
Outlet conduit (vacuum)
T1
Rinse Chemical
T2
Outlet conduit (vacuum)
100
T3
Outlet conduit (vacuum)
Rinse Chemical
T4
Outlet conduit (vacuum)

Figure 2E

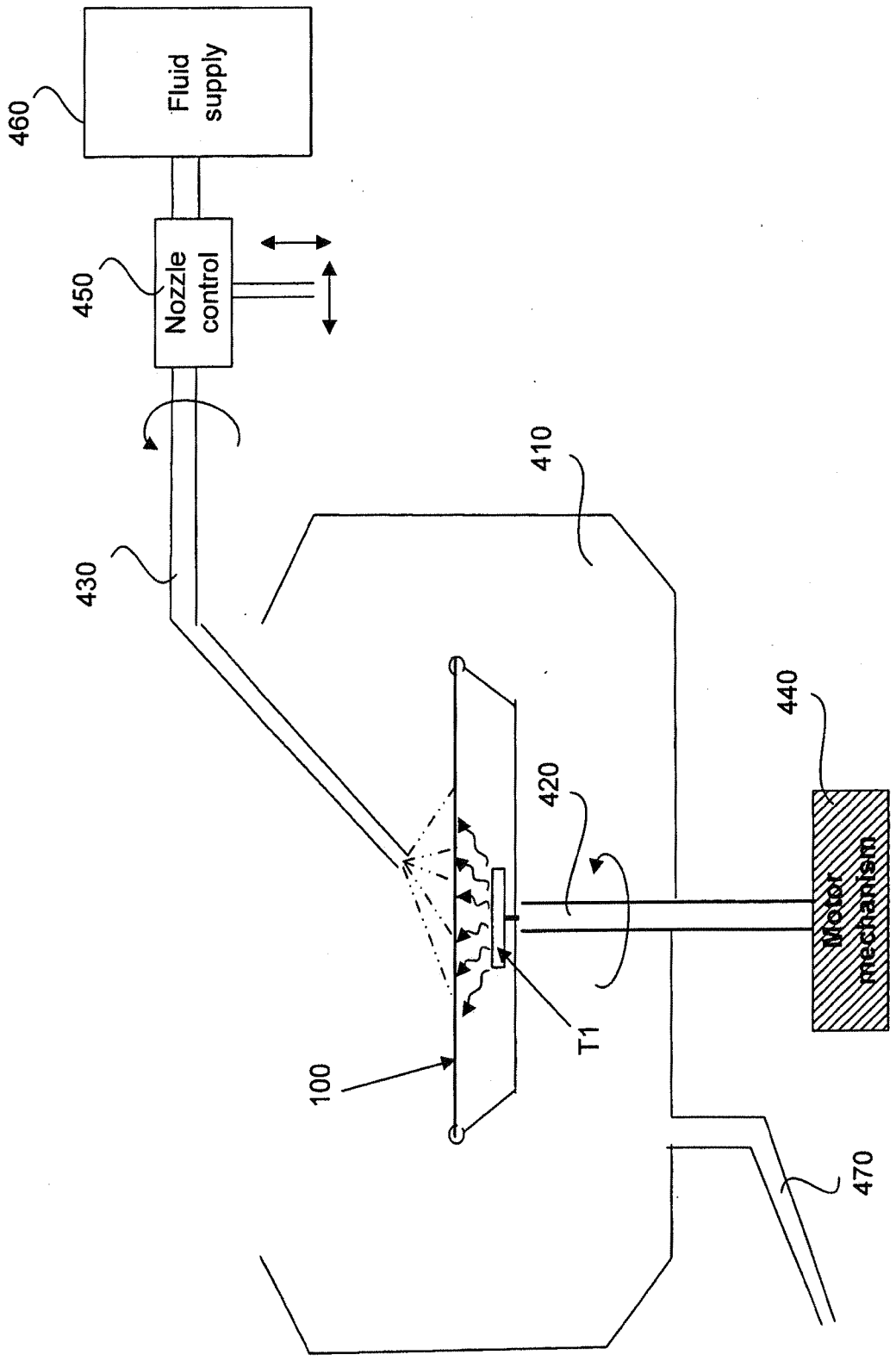

460
Fluid supply
450
Nozzle control
430
410
440
420
Motor mechanism
T1
100
470

Figure 3A

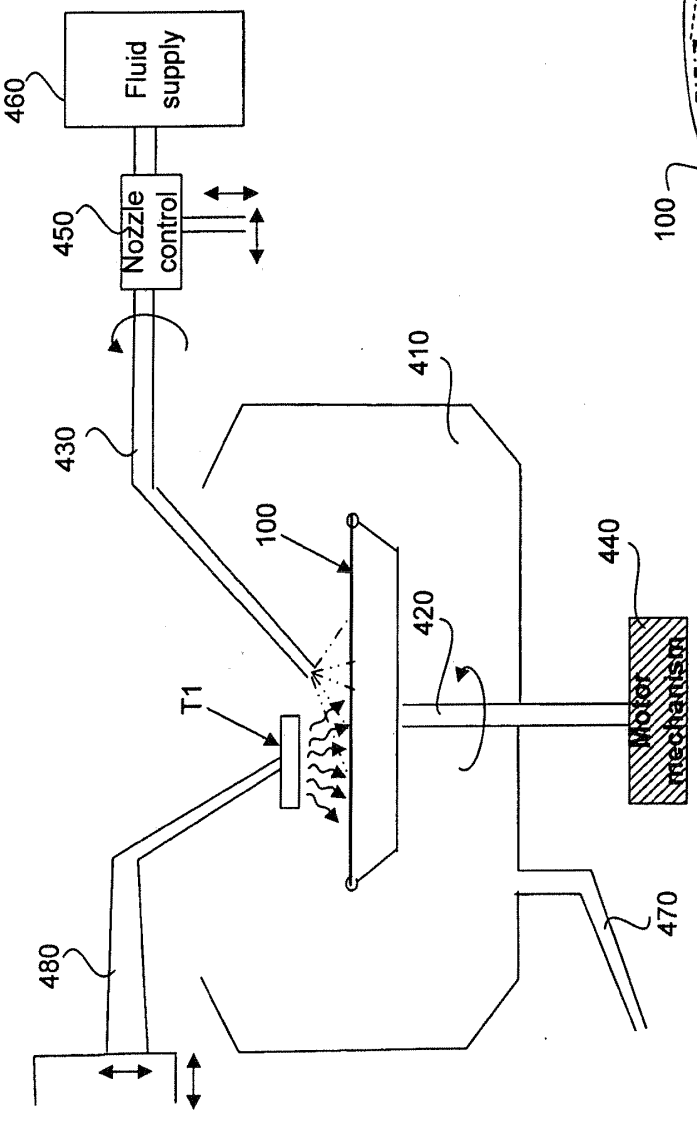



Figure 3B

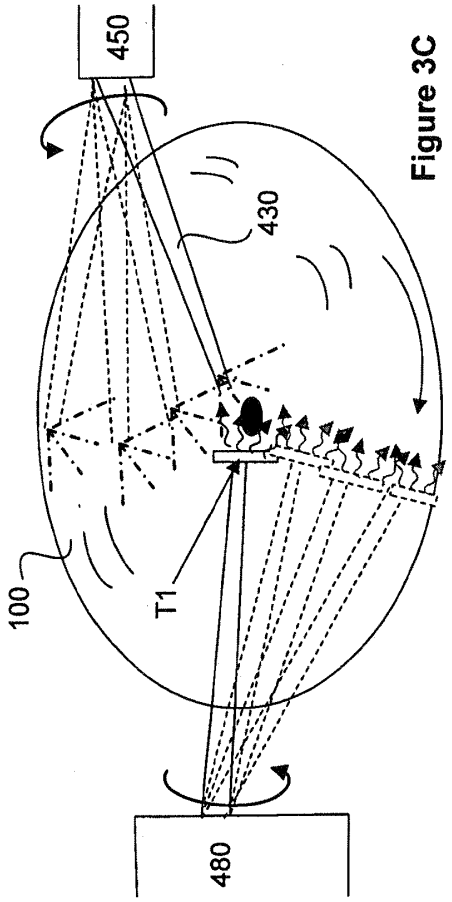



Figure 3C

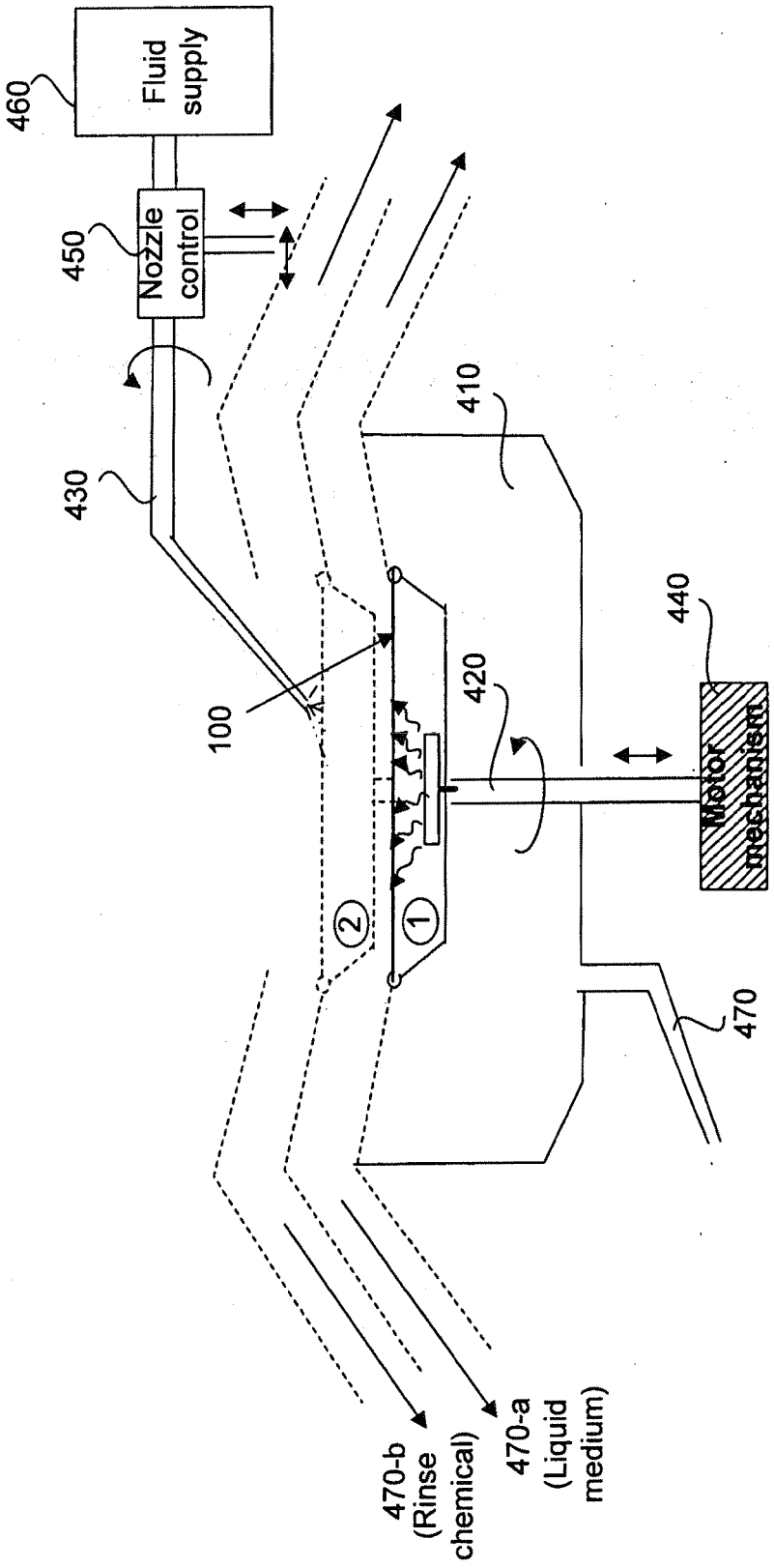

460
Fluid supply
450
Nozzle control
430
100
410
420
440
Motor mechanism
470
470-b (Rinse chemical)
470-a (Liquid medium)
1
2

Figure 3D

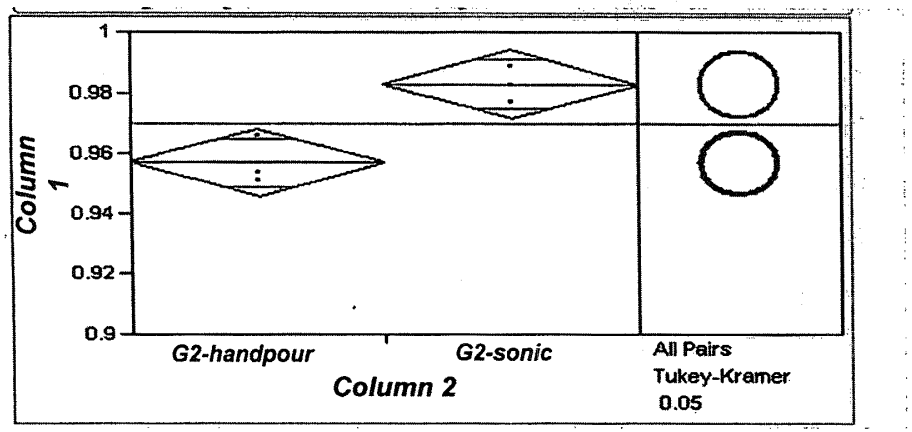



Figure 4A

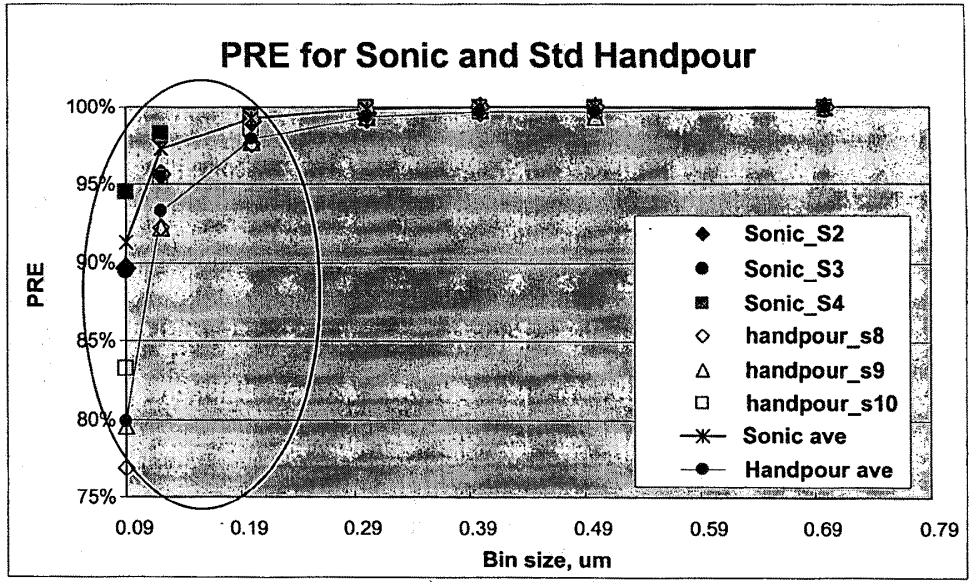



Figure 4B

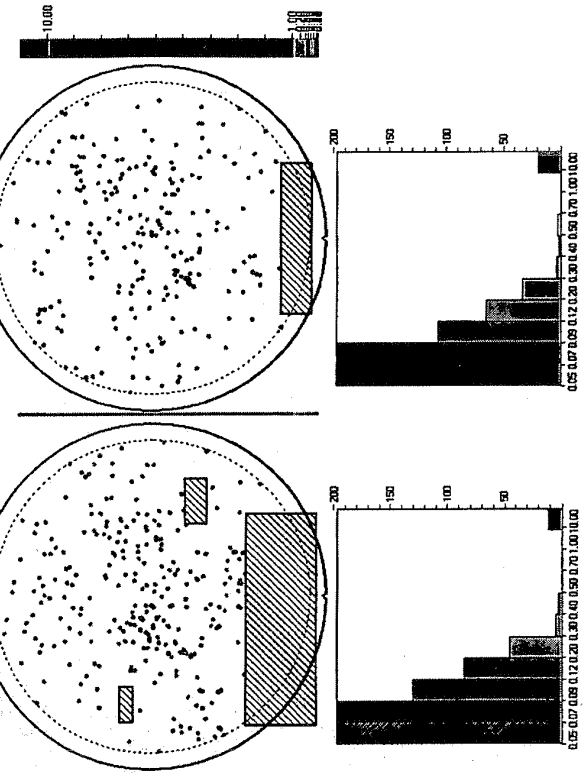



Figure 5B

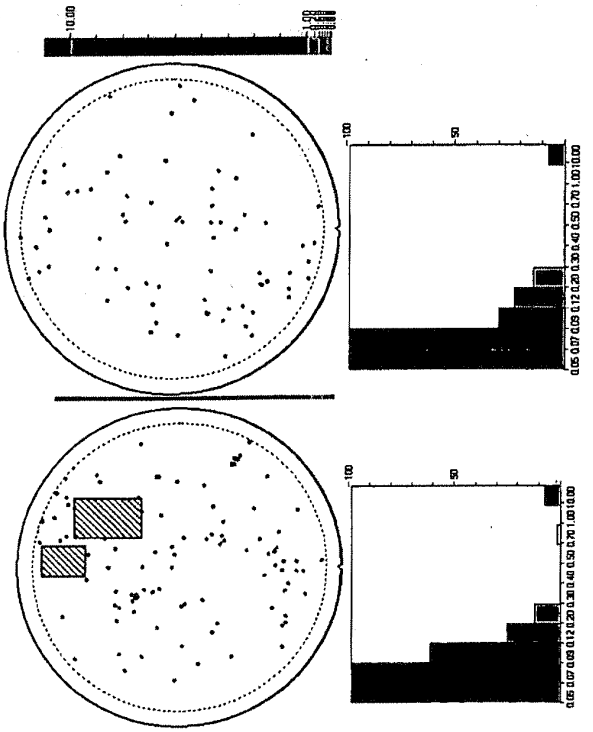



Figure 5A

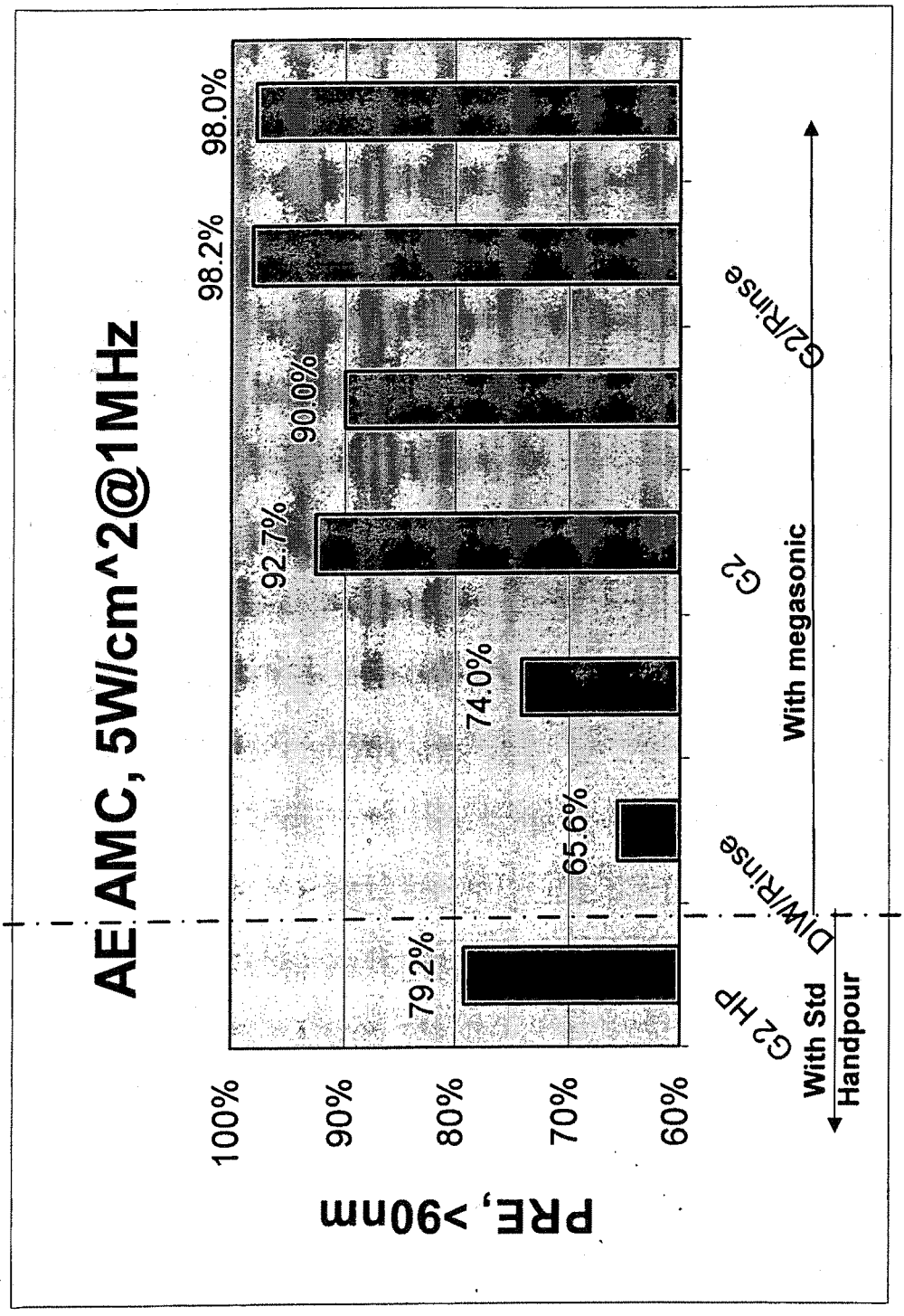

AE AMC, 5W/cm^2@1MHz
PRE, >90nm
100%
90%
80%
70%
60%
98.2%
98.0%
90.0%
92.7%
74.0%
65.6%
79.2%
G2/Rinse
G2
DIW/Rinse
G2 HP
With megasonic
With Std Handpour

*Figure 6*

# Damage Data – 1MHz at various power settings

- AE power vs. damage:

$5W/cm^2$ ~ 30K damages → $0.7W/cm^2$ ~ 500 damages → $0.3W/cm^2$ ~ 0 damages

+18% PRE +5% PRE

damages damages

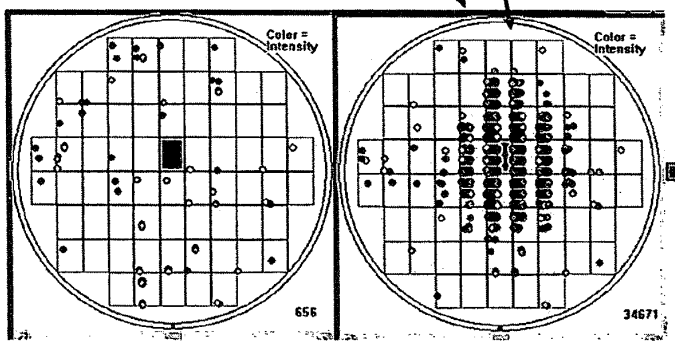



*Figure 7a*

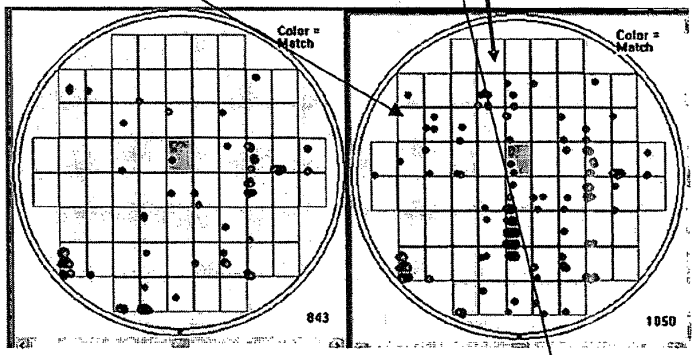



*Figure 7b*

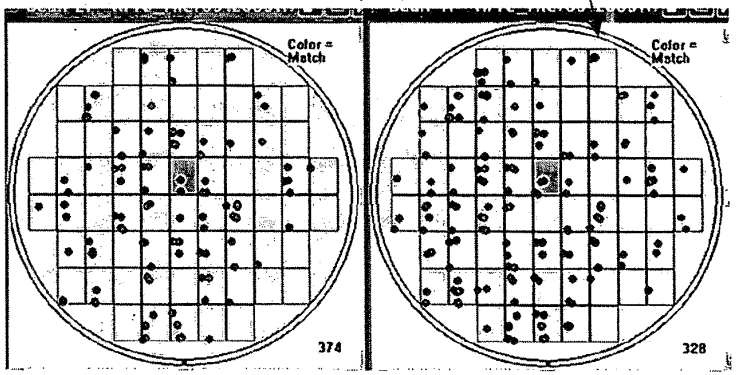



*Figure 7c*

High power of AE introduces damages with higher PRE

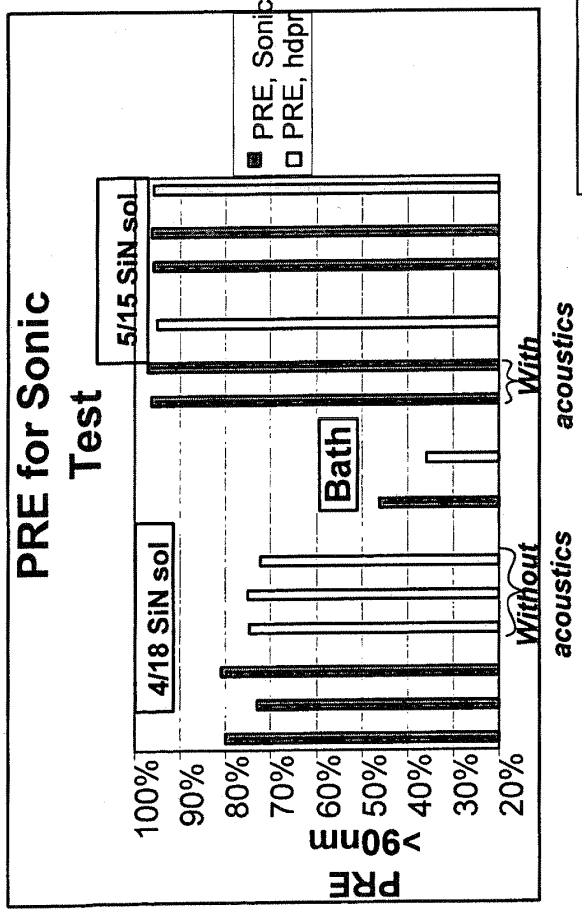



Figure 8A

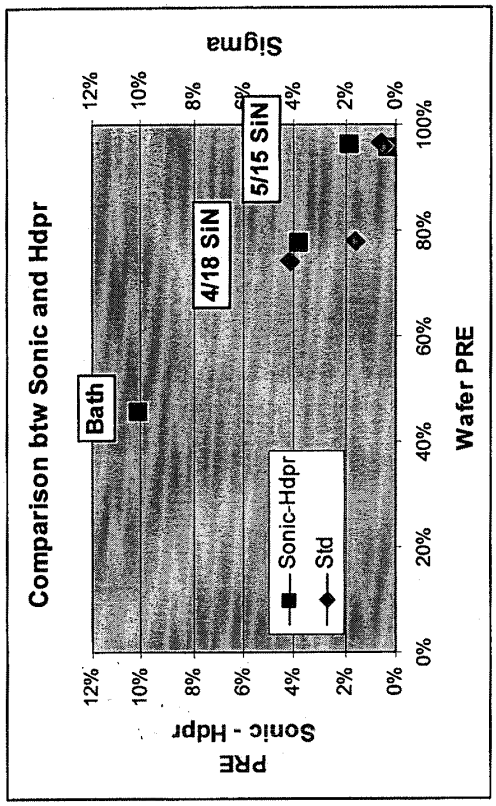



Figure 8B

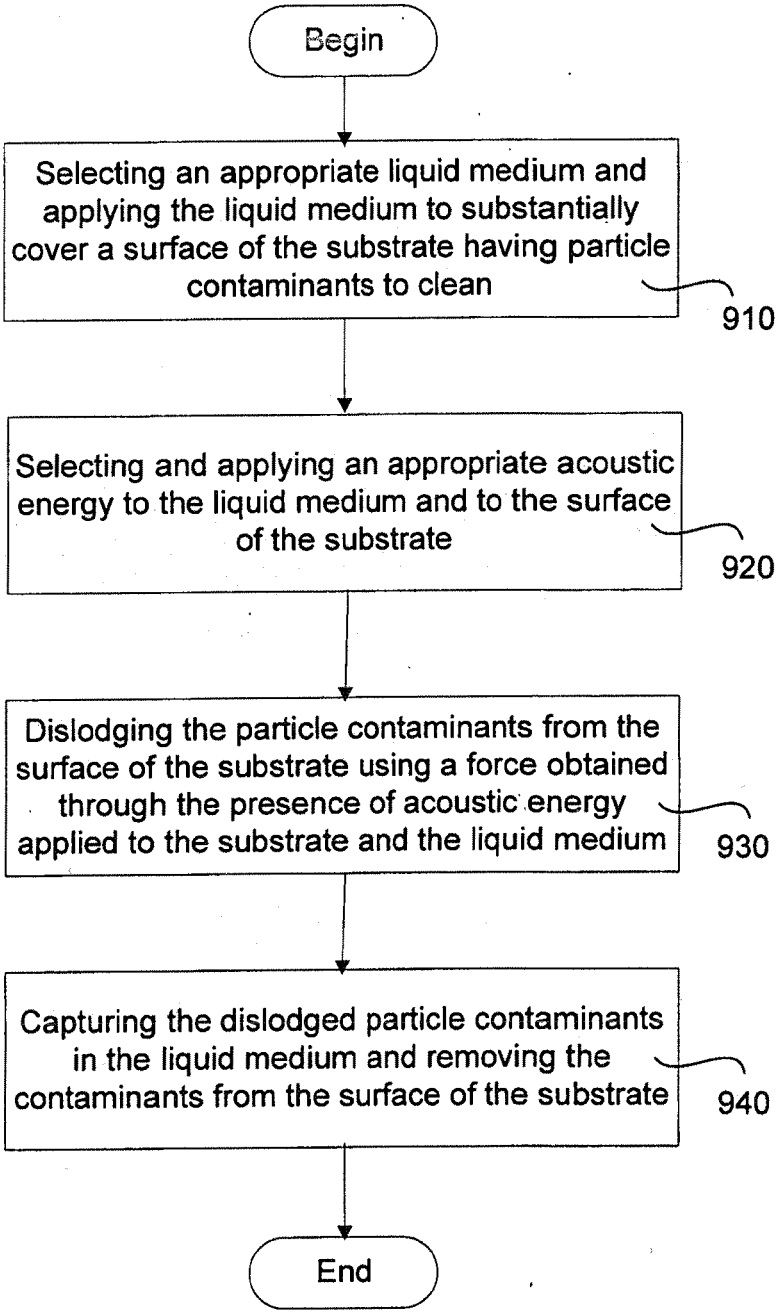

Begin
Selecting an appropriate liquid medium and applying the liquid medium to substantially cover a surface of the substrate having particle contaminants to clean
910
Selecting and applying an appropriate acoustic energy to the liquid medium and to the surface of the substrate
920
Dislodging the particle contaminants from the surface of the substrate using a force obtained through the presence of acoustic energy applied to the substrate and the liquid medium
930
Capturing the dislodged particle contaminants in the liquid medium and removing the contaminants from the surface of the substrate
940
End

**Figure 9**