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各 位

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AACC Clinical Lab EXPO 2010 出展のご報告

弊社は2010年7月27日から29日までの3日間、アナハイム(カルフォルニア)で行われた臨床検査機器・試薬の展示会「AACC Clinical Lab EXPO 2010」に出展いたしました。

今回は弊社の成形・アセンブリ技術を集約したマイクロ流路チップのサンプルを展示いたしました。おかげさまで盛況のうちに3日間の会期を終えることができました。お立寄り頂きました多くの皆様には心より御礼を申し上げます。

出展内容に関するご質問などございましたら、お問い合わせいただきますようお願いいたします。

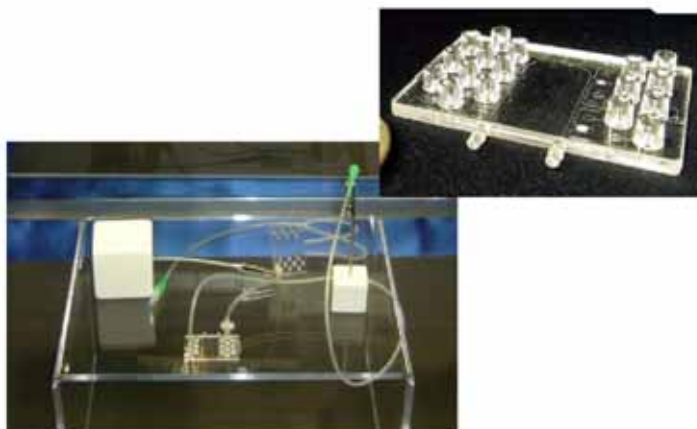


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CLINICAL LAB EXPO 2010
July 27-29, 2010
ANAHEIM CONVENTION CENTER, ANAHEIM, CA



以上

Enplas microfluidic chips achieve comparable performance to glass and PDMS chip with

- low background noise fluorescent detection technology
- hydrophilic surface coating technology
- plastic pneumatic valve technology



Low background fluorescent detection

thin detection region

microchannel

thin detection region

microchannel

thin detection region

detect from side direction

long optical path detection due to side detection

- Reducing Auto-Fluorescence by making irradiated volume smaller
- Increasing fluorescent signal by long optical path detection.

-> increasing signal to noise ratio

detection condition : fluorescent microscope (BX51), objective lens (UPlanFI10X), ICCDcamera (gain :10), optical filter (UMWIB2)

Back Ground

| Material | Fluorescent Intensity (a.u.) |
|------------------------|------------------------------|
| glass | ~45 |
| thick plastic (2 mm) | ~55 |
| thin plastic (0.25 mm) | ~40 |

Limit of Detection of FITC

| Material | concentration (μmole/l) |
|------------------------|-------------------------|
| glass | ~0.15 |
| thick plastic (2 mm) | ~0.18 |
| thin plastic (0.25 mm) | ~0.05 |

Background of plastic chip with **thin detection region** has almost same as glass chip

Plastic chip with **thin detection region** and **long optical path side detection** has best detection limit.

contamination protect wall

Furthermore contamination protect wall can prevent background noise due to foreign material.

Hydrophilic surface coating

microchannel

water

uncoated surface

water

coated surface

All of inside channel wall can be coated

Water contact angle

| Days | uncoated (deg) | coated (deg) |
|------|----------------|--------------|
| 0 | ~65 | ~35 |
| 30 | ~65 | ~35 |
| 60 | ~65 | ~35 |
| 90 | ~65 | ~35 |
| 120 | ~65 | ~35 |
| 150 | ~65 | ~35 |

Surface property has very small aging variation. The coated surface is still hydrophilic after 4 month.

Plastic pneumatic valve

underdevelopment

top channel (pneumatic)

bottom channel (sample)

bottom channel top channel

thin film (10 μm)

Cross section A-A

0 kPa

FITC filled in bottom channel

200 kPa

Fluorescence is high due to film is flat

Fluorescence is low due to film bent with pneumatic operation

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Enplas microfluidic chips provide superior value than glass and PDMS chip with

- combination with additional structures
- side open channels
- various channel forms

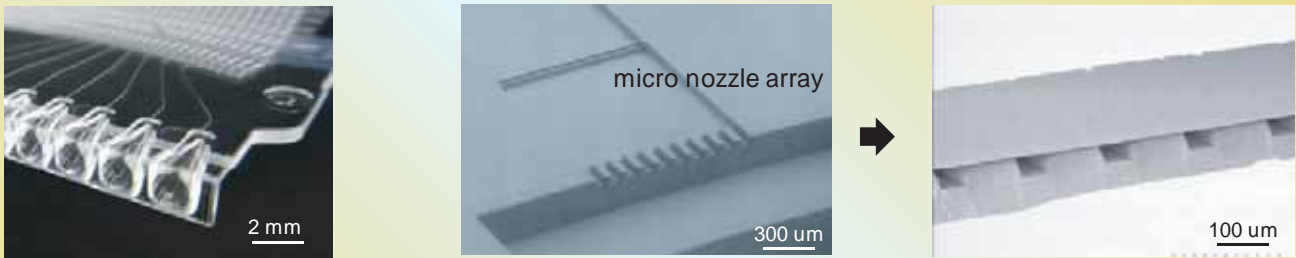


Combination with additional structures



Total cost can be reduced by a single tool product design

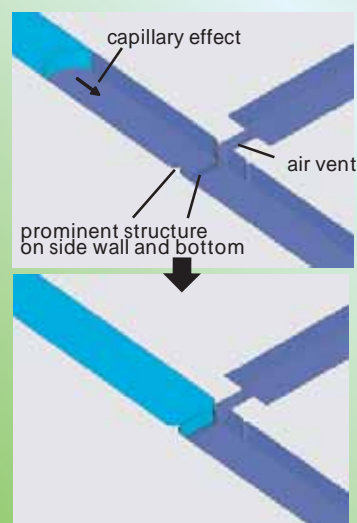
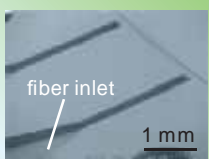
Side open channels



Minimum risk in injection molding.
Suitable for mass production.

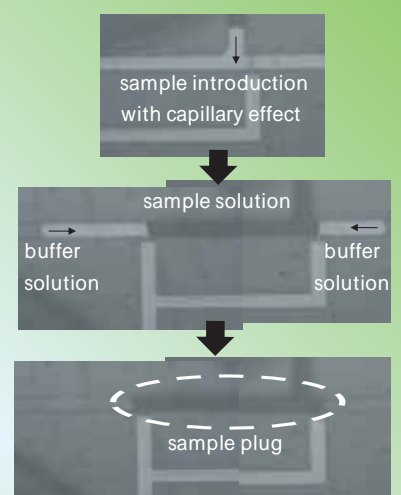
After bonding

Various channel forms



SEM picture of prominent structure and air vent

Liquid can stop because of surface tension



Sample plug formation with combination of stop valve and air vent

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