Low-cost field-fabricated Instrumentation

Yogesh Kulkarni
Vigyan Ashram
Pabal Dist.Pune India
www.vigyanashram.com

Manu Prakash
CBA
MIT
Milk – Small farmers

Milk collection center in village (all milk in village gets collected together)

Milk processing unit

- Milk get tested at processing unit
- If found sour, all farmers get less payment.
- If farmer can detect the souring before it gets 40% sour, milk can be saved.
Potable water:

To find out whether water is suitable for drinking?
Data Logger for recording water level in Well

- Vigyan Ashram maintains records of water level in the well, everyday.

- We have records for last 24 years

- It helps us in predictating the time till water last in the well. It helps in water management.

- A simple instrument which can record the water level in the wells in a village.

- Can predict the time till water last depending on the water consumption and past records.
Digital divide

Instrumentation divide
Microfluidic low-cost diagnostics

Multi-layer direct write process
- Flexible
- Transparent
- Disposable
- Low-cost

- Passive separation eg. plasma separation from whole blood sample, milk components
Low-cost colorimetric anemia detector

Nearly 1/4 of world population is anemic

Microfluidic volume control
Capillary pump
On-chip reagents
Safe disposal

Fig. 1. Absorption spectra of hemoglobin derivatives in the near infra-red. Curve I represents acid hematin obtained by diluting blood in N/10 HCl; Curve II, methemoglobin at pH of 6.3 to 6.7; Curve III, oxyhemoglobin; Curve IV, cyanmethemoglobin; Curve V, carbonylhemoglobin.