Interdisciplinary Instrumentation Colloquium

Biological Large Scale Integration

Speaker: Stephen Quake
Dept. of Bioengineering, Stanford University

Date: Wednesday, May 4, 2005
Time: 4:00 PM (refreshments at 3:45)
Place: LBNL, Building 50 Auditorium
(directions at http://InstrumentationColloquium.LBL.gov)

The integrated circuit revolution changed our lives by automating computational tasks on a grand scale. My group has been asking whether a similar revolution could be enabled by automating biological tasks. To that end, we have developed a method of fabricating very small plumbing devices – chips with small channels and valves that manipulate fluids containing biological molecules and cells, instead of the more familiar chips with wires and transistors that manipulate electrons. Using this technology, we have fabricated chips that have thousands of valves in an area of one square inch. We are using these chips in applications ranging from screening to structural genomics to ultrasensitive genetic analysis. However, there is also a substantial amount of basic physics to explore with these systems – the properties of fluids change dramatically as the working volume is scaled from milliliters to nanoliters!

Presentations (pdf files) and dates of future colloquia are posted at

http://InstrumentationColloquium.LBL.gov

Suggestions for speakers and topics are welcome. Please contact any of the organizers

Helmuth Spieler (Chair, Physics)	spieler@LBL.gov
Peter Denes (Engineering)	PDenes@LBL.gov
Bill Moses (Life Sciences)	WWMoses@LBL.gov
Howard Padmore (ALS)	HAPadmore@LBL.gov
Moishe Pripstein (Physics)	M_Pripstein@LBL.gov
Howard Wieman (Nuclear Science)	HHWieman@LBL.gov

Please direct questions regarding site access to

Cathy Thompson	CAThompson@LBL.gov	Tel. 510-486-5421
Dianna Jacobs	DJacobs@LBL.gov	Tel. 510-486-5146