

Hands-On Research Schools

for science faculty (ages 25-35) from developing countries



PARTICIPANTS

- ◆ learn to do science using inexpensive modern instruments
- ◆ learn powerful computational methods
- ◆ develop communication and networking skills

Hands-on table-top science

cost: ~\$1000

time: ~year(s)

scientists: ~few

- ***Inexpensive instrumentation***
e.g., web camera -- \$60



- ***Inexpensive computation***



1 TB disk memory



MATLAB®

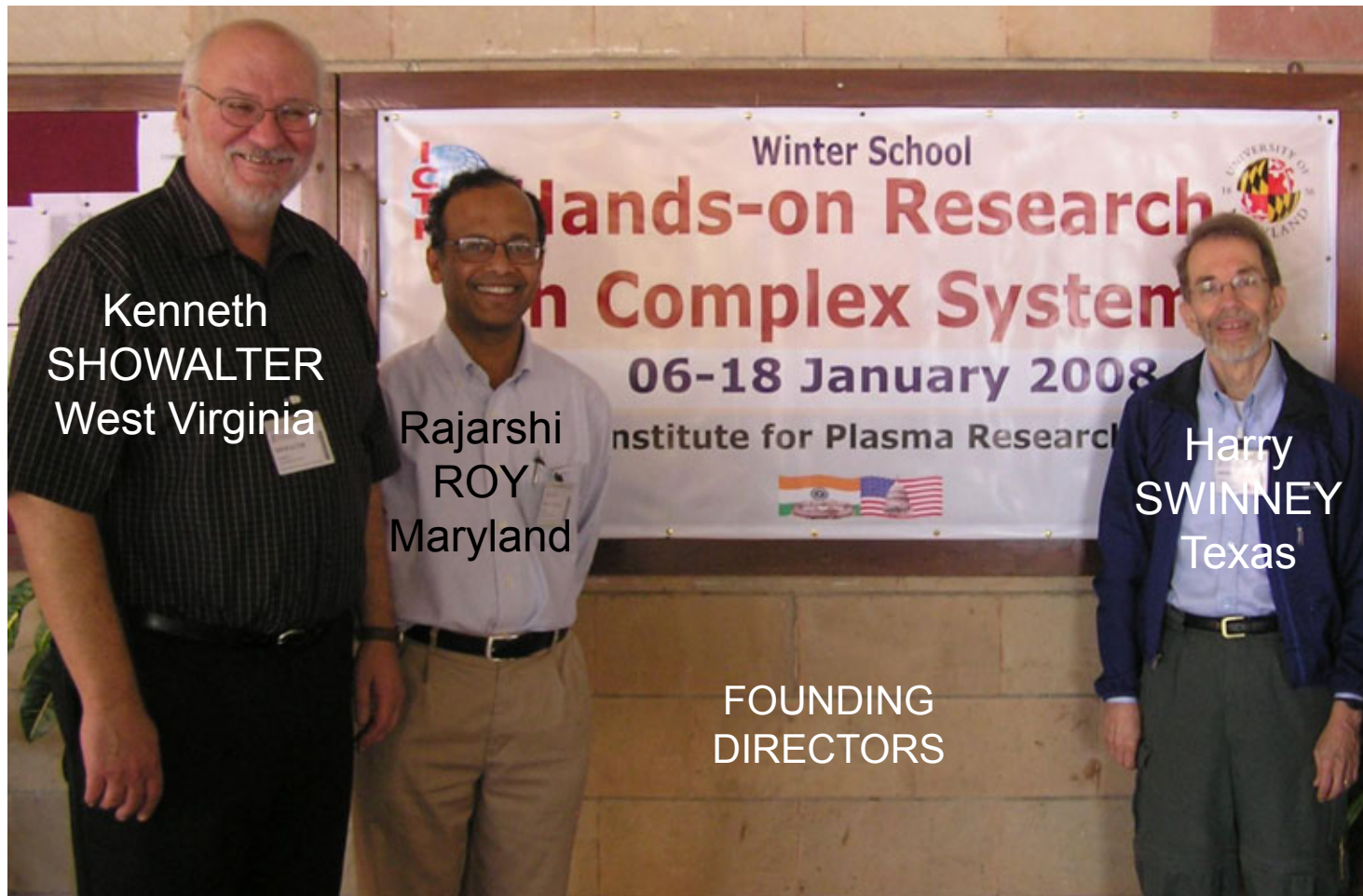


Hands-on Research School idea (2004)

Proposal rejected by World Bank, Dell, HP, Acer, Schlumberger,
US National Science Foundation, American Physical Society

2006: ICTP (Trieste) decides to sponsor three schools

2010: three more approved



Kenneth
SHOWALTER
West Virginia

Rajarshi
ROY
Maryland

Harry
SWINNEY
Texas

FOUNDING
DIRECTORS

2008

Ghandhinagar, INDIA



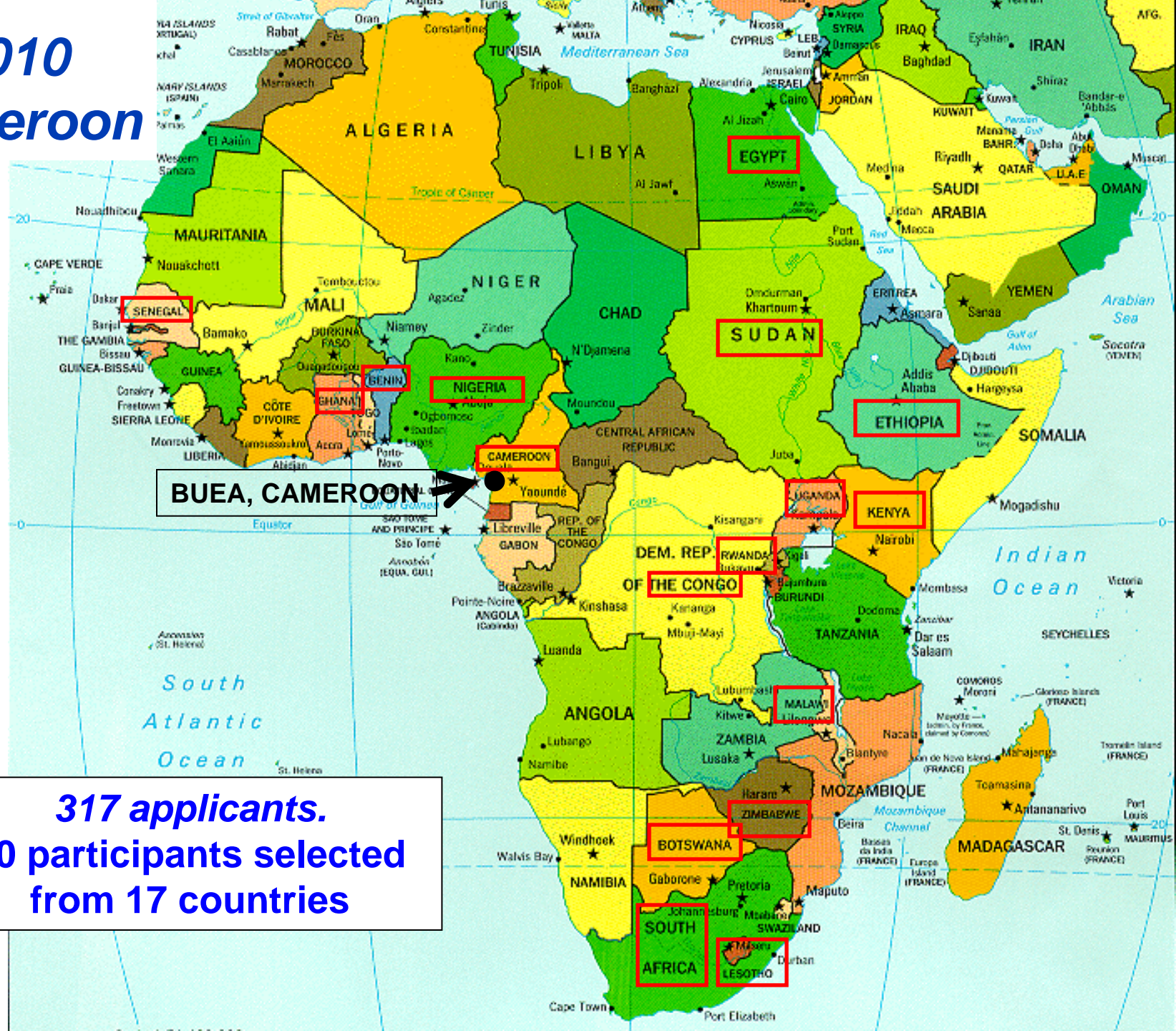
2009

São Paulo, BRAZIL



- Each school:***
- 50-60 participants from about 18 countries
 - two weeks duration

2010 Cameroon



BUEA, CAMEROON

**317 applicants.
50 participants selected
from 17 countries**

Hands-On Research School

in Cameroon (2010):

participants received full travel & subsistence support



ICTP/UNESCO
through the
International Centre for
Theoretical Physics
(Trieste, Italy)

Nigeria
LNG,
Limited



U.S. National
Science
Foundation

University of Buea
and the
Ministry of
Higher Education
of Cameroon





UNIVERSITY OF BUEA
UNIVERSITE DE BUEA
KNOWLEDGE WITH WISDOM



Buea: at foot of Mount Cameroon

4,040 meters



Opening Day

2 August 2010



**FACULTY: 12 senior scientists and
12 graduate student assistants (all *pro bono*)**
[not all pictured]



Hands-on laboratories

turbulence



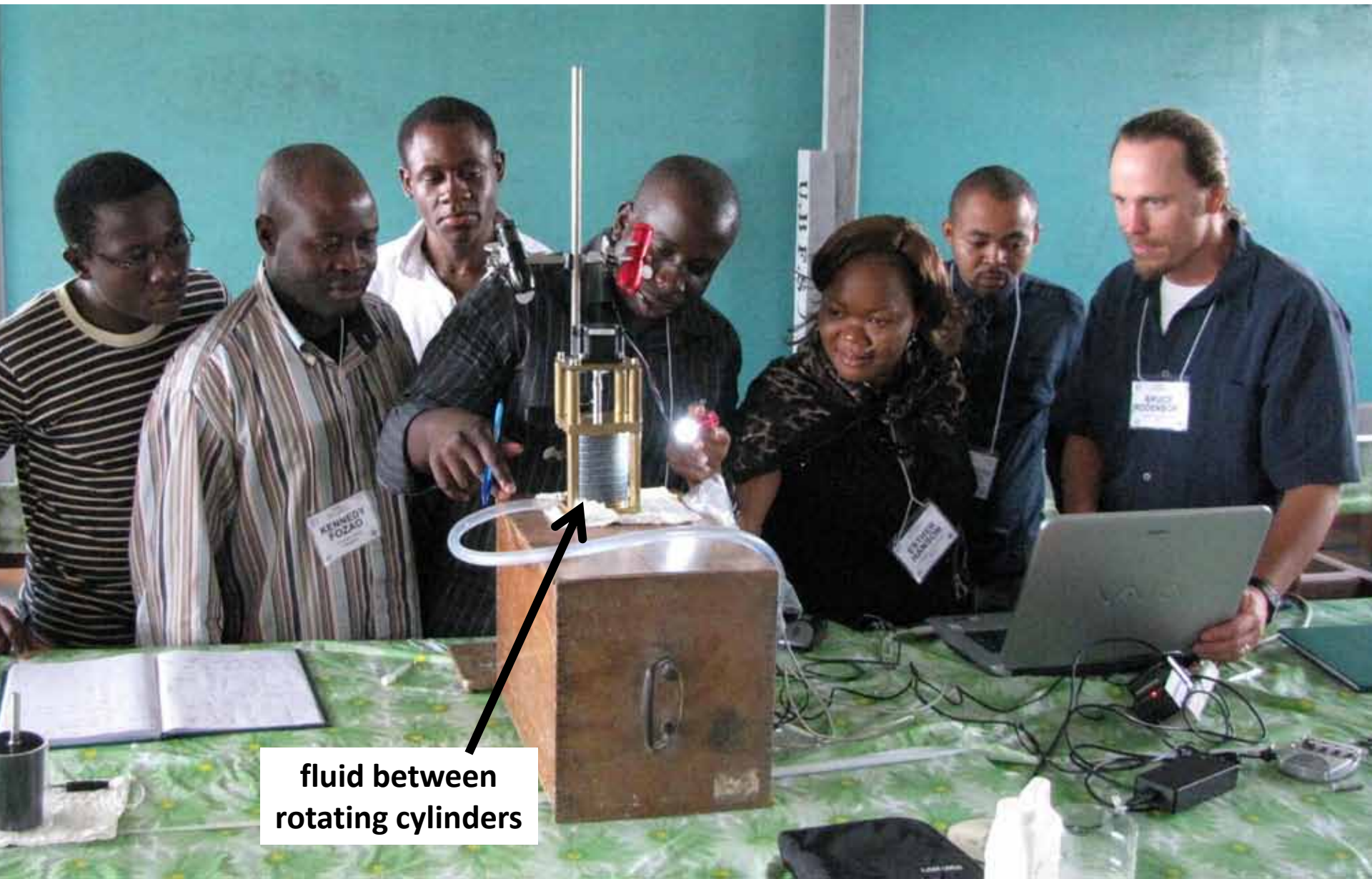
chemical reaction





Human locomotion laboratory:
study a peanut vendor walking

Fluid flow laboratory



fluid between
rotating cylinders

Fiber optics systems laboratory



Interactive teaching/learning



Develop communication skills

poster presentations



talks



Tutorials



Hands-On computation laboratory



Teaching Lecture Demonstrations



Faculty-participant mealtime interaction



Faculty-participant mealtime interaction



Hands-On School outing to the beach

8 August 2010



On the only day with no rain before 4 pm!

FUTURE ***handsonresearch.org***



- need: year-long schools
- fixed locations
- alumni organization and continuing education