More Information on US-India Engineering Fellowship Opportunity

Gadgil Lab for Energy and Water Research, University of California, Berkeley

http://GadgilLab.berkeley.edu
From 1970 on, there was a massive switch to handpumped wells for drinking water in South Asia.

> 10 million tubewells were installed in Bangladesh alone in response to severe microbial contamination of surface waters.
This led to the *largest mass poisoning in human history* when naturally occurring arsenic was found

> 70 million people are being poisoned in Bangladesh
One estimate is 20% of adult deaths are now from arsenic*

*Argos et al, *Lancet* 2010

Arsenic is so toxic that WHO-MCL is 10 ppb

Bangladesh water has levels up to 2000 ppb!

(Map Credit: Chowdhury et al., 2000, Environ. Health Perspect)
Arsenicosis causes painful skin lesions, lowers children's IQ, gangrene and amputation, cancers, (+ other effects), and death.

Symptoms of arsenicosis began in the early 1990s

Arsenicosis causes painful skin lesions, lowers childrens’ IQ, gangrene and amputation, cancers, (+ other effects), and death.
In the last couple of decades, dozens of different technologies and arsenic mitigation measures were implemented to tackle this arsenic crisis in rural Bengal, but......
... >95% of these failed within 1 year!


There is a need to develop a Sustainable Technology System
= Effective, Robust, Financially Viable, Locally Affordable, Scalable, and Socially Embedded
The Gadgil Lab is working with public and private partners, developing a full system approach
We invented a technology based on electrocoagulation, called ECAR, to fit within a sustainable, scalable system.

ECAR = Electro-Chemical Arsenic Remediation

Fe-II is produced, transforms to Fe-III and precipitates as Fe-III-Oxides.

P, Si, As sorb to Fe-III-Oxides, then settle out as sludge.

Battery
ECAR is backed with robust new science


ECAR prototypes have progressed from beaker scale (2006) …
... to a 100L batch reactor (tested in India, 2010) ...
.. to a practical scale 600L batch reactor (2013).

Jadavpur University, Kolkata, 2013
The 600L reactor was tested at Dhapdhapi High School (West Bengal, India) from 2012 – 2013
ECAR consistently delivered < 4 ppb arsenic – excellent performance results!

**Initial Arsenic** = 250 µg/L

**Final Arsenic < 4 µg/L (average 2.1 µg/L)**
Now we are working with public and private partners to operate a 10,000 liter per day demonstration system.
Our prototype has grown!

We need demonstrate operation long term, identifying and solving problems as we go.
We need an Engineering Fellow to lead our field research team for 6 mo (to 1 year)!

As a Fellow you will:

• Lead data collection at the site
• Conduct diagnostic experiments (with guidance)
• Help identify and solve engineering challenges as they occur
• Act as a liaison between the technical team in Berkeley and interdisciplinary partners in India
This is an excellent opportunity for any engineer interested in solving development challenges

As a Fellow you will:

• Gain leadership experience and demonstrate your ability to get things done in a developing country

• Work closely with the communities and people your work seeks to impact, gaining a more nuanced understanding of the challenges

And …
Engage in extremely meaningful work in a beautiful place with extraordinary people!
What to expect

• You will stay in Kolkata near Jadavpur University (JU) in an apartment and travel to the school by local transport (either local train or Car).

• You will have a local project staff assigned to you by JU team, who will accompany you to the site all the time.

• You will need to be comfortable working outside of your comfort zone.

• You will work long hours, but have plenty of time to rest and do some site-seeing.

• You will receive a monthly stipend to cover living expenses ($1500/mo) and all travel expenses will be covered.

• Position starts in India on Jan 2, 2016 (no deferments, starting mid-Dec is preferred). There will be a 3 month trial period, with an initial commitment of 6 months from the candidate, with potential to extend up to one year.
What to do now

If this seems like a good fit for you (or if you have questions), please send a cover letter and resume via email to Susan Amrose (susan.amrose@gmail.com), cc to Siva Bandaru (sivaram.satyam@berkeley.edu) with “[ECAR Fellowship]” in the subject.

Note that if you proceed to the next round of consideration, we will request the name and phone number of two references we can talk to. Please have these ready.

Time is running short, so reply soon! We will review submissions on a rolling basis until Oct 18