



## USAID Research and Innovation Fellowships

Office of Science and Technology

*“Attracting great minds to places of great opportunity”*

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### Example of a Host Opportunity

**Institute:** University of Indonesia

**Point of Contact:** Professor Farida Pranoto, telephone 04 021 786 7222, Department of Environmental Studies, Depok 16424, Jakarta, Indonesia

**Point of Contact Email Address:** [fpranoto@ujakarta.edu](mailto:fpranoto@ujakarta.edu)

**Supervisor:** Professor Farida Pranoto. I have been a Professor of Chemistry Science at the University of Indonesia for the last six years. My research interests are in source appointment of air pollution in urban areas of Indonesia and the broader Southeast Asia region. I currently run a research group of 5 people (3 graduate students and 2 postdoctoral researchers). I have published 23 papers both internationally and nationally, as well as presented at international and national conferences. I have received scientific funding from the Government of Indonesia and the World Health Organization.

**Does the Supervisor have experience hosting foreign students or visiting researchers?** Yes

**Country:** Indonesia

**Discipline:** Chemistry

**Duration of Hosting Opportunity:** 6-12 months

**Work Environment:** We can provide a desk in a secure, shared office area at our university. Here, the Fellow will have access to electrical power and internet via plug-in cable. The Fellow will share this space with other researchers, including professors, postdocs, and students. As described in the project description below, the Fellow will be assessing air quality samples at two sites in Jakarta. Our research team will have the Fellow do this at locations we have used previously for the same purpose. These sites are secured areas, and we will assist the Fellow in finding public transportation to and from this site.

**Project Description:** Particulate matter (PM; e.g. dust and smoke) air pollution poses a serious health risk to citizens of Jakarta, Indonesia. Also, PM pollution in the form of black carbon from combustion sources is believed to be a significant contributor to global warming. Our research group would like to assess the current progress of local measures to reduce PM mitigation measures by conducting a field campaign to quantitatively assess the sources of PM in Jakarta, Indonesia over the period of 6-12 months.

The proposed project focuses on determining air pollution sources in Jakarta using the techniques of x-ray fluorescence spectroscopy (XRF) and positive matrix factorization (PMF). The Fellow will be responsible for using our sampling equipment to take PM2.5 samples at two pre-determined sites in Jakarta over a period of 6 to 12 months. The Fellow will also use our XRF spectrometer to analyze collected samples during that period, and perform PMF to determine what sources from which the PM2.5 is originating. Lastly, the Fellow will create a webpage (e.g. a wiki) that shares and stores our research results.

We hope that the Fellow will be experienced in meteorological data collection and would bring expertise in statistical methods and atmospheric science. Expertise in these areas would help fill a critical knowledge gap at our university. The Fellow will be able to access meteorological data taken at our university, and other relevant data taken by our research group. The Fellow would also have many opportunities to interact with scientists in our group, as well as at the University of Indonesia, to learn about existing related projects. It is our hope that by hosting a Fellow, we will begin a relationship with both the Fellow and their U.S. institution that may lead to future collaborations. We also would like if the Fellow is willing to help students in our group with their scientific writing and speaking in English.

Our research team intends to publish results from this work in a peer-reviewed journal and present it at conferences, as well as share this information on the Internet through a new web page. The Fellow would be expected to take a lead-role in helping write and present this work in these three forms, while it is understood the work is a team effort. While we can communicate with the Fellow in English, it may be to the advantage of the Fellow to take classes in Indonesian for a good general experience in Jakarta. We are able to provide the Fellow with free language classes at our university. In order to occasionally transport equipment, as well as frequently travel to and from the site using public transportation or walking in hot weather, the Fellow should be in good health.

### **Expected Development Outcomes:**

- 1) Air quality research is an important local policy and health area in Jakarta. Helping our research would move towards significant improvements in steps taken to reduce pollution and provide insight into treatment of health problems caused by particulate matter.
- 2) Our research will be used by local government entities to develop an action plan for pollution management.
- 3) By creating and managing a wiki page for sharing and storing our research results, this will foster more open data in our programs and encourage collaboration with other similar organizations.
- 4) Improving the technical capacity of the university through expertise gained from the Fellow and through interactions with their home institution.

**Host Support for Fellow:** office space, local transportation, language training, other: space and access on university servers to create a website

**Institution Letter of Approval:** Uploaded to the website