ENVIRONMENTAL PROCESSES ENGINEERING

School of Civil and Environmental Engineering, Cornell University

The School of Civil and Environmental Engineering (CEE) at Cornell invites applicants for a tenure-track faculty position in the area of Environmental Processes (EP) engineering. The EP faculty at Cornell have historically focused on the fundamental biological, chemical, and physical phenomena that affect the behavior and fate of contaminants in soil and aquatic environments along with the planning, design, and operation of the engineering facilities needed to ensure effective control of environmental quality. While we wish to maintain this focus, our vision is to broaden the application of these fundamental processes to address the pressing needs of society.

Overall areas of interest include increasing scarcities of fresh water and energy resources and the problem of emerging pollutants. We seek exceptional candidates with strong experimental skills in the biological, chemical, and physical aspects of environmental engineering. However, complementary capabilities in modeling and theory are also desirable. The School of CEE at Cornell has great strengths in the related areas of Environmental Systems, Water Resources, and Environmental Fluid Mechanics. Candidates displaying a potential to collaborate with research in these areas or other fields at Cornell (including our sister department in the College of Agriculture and Life Sciences, Biological and Environmental Engineering) are especially welcomed.

Examples of suitable research foci include (but are not limited to) the following;

- Biological, chemical, and physical aspects of renewable energy production and/or biorefineries.
- Environmental impacts of energy production and distribution.
- Transformation, transport, and fate of emerging contaminants.
- Microbial communities with novel degradative capabilities.
- Behavior of organisms and populations in natural and engineered systems – possibly including the influence of stochastic environmental conditions.
- Environmental sensors.
- Sustainable water and wastewater treatment technologies.
- Systems biology applied to complex systems of environmental relevance (at the single-microbe or community scale).
- Membrane technologies for water and wastewater treatment.
- Coupled microbial and chemical processes (e.g. interdisciplinary problems where chemical speciation, phase distribution, and microbial activity mutually modify contaminant bioavailability and transport).
- The interactions between fluid mechanical properties and living organisms and/or contaminant transport (e.g., the effect of tidal oscillations and turbulence on sediment/water exchange of pollutants; attachment/detachment of colloidal particles in flow through porous media).
- Heterogeneous (bio)chemical processes (e.g. in the context of sensors, groundwater quality, water treatment).
Applicants should have a Ph.D. in Engineering. Successful applicants will be expected to conduct a vigorous, externally funded research program, while also contributing to undergraduate and graduate teaching in the EP area. Potential graduate courses include those in physical/chemical processes, biological processes, environmental microbiology, or water chemistry – including associated laboratory courses.