Nita Sahai

meet the NEW FACULTY

We wish to introduce our newest faculty member, Dr. Nita Sahai, who joined us in August 2000. She was born in Jodhpur, India, and received a major in geology and a minor in chemistry from St. Xavier's College in Bombay, India. She received her PhD in geochemistry at Johns Hopkins University, after which she took a one-year post-doctoral position at Arizona State University, followed by a two-year NSF post-doctoral fellowship with Prof. Jack Tossell at the University of Maryland, College Park. Her fundamental research interests are in the areas of biomineralization and biomimetic materials synthesis, including how silica is precipitated from water by diatoms and radiolaria, the interaction of proteins and inorganic ions leading to bone-apatite growth in vertebrate animals, and the precipitation of clay minerals as mediated by organic compounds exuded by organisms.

She is also involved in aqueous environmental geochemistry with a focus on the adsorption of toxic metals on mineral surfaces. Her research attempts to understand the fundamental reaction mechanisms of biogeochemical import, and could also have useful biomedical and industrial applications. To undertake the intensive quantitative calculations of the potential chemical pathways involved in the processes described above, Nita has assembled an impressive parallel-processing array of PCs, and has also built a "wet-chemistry" laboratory for experimental work. She is building collaborations with the chemistry department and with the water chemistry program at UW. Nita is excited to have already formed a research group consisting of three graduate students, and encourages students to think in an indisciplinary manner to face the research challenges of the future.

(See Nita's faculty report on page 58.)

(Radiogenic Isotope Laboratory, continued)

opportunity for high precision (+/- 0.002 %) isotopic measurements of high-ionization potential elements that are extremely difficult or impossible to analyze by other means.

Major advances will now be possible in isotope systems such as ^{176}Lu-^{176}Hf and ^{187}Re-^{187}Os, which promise to provide important new insights into crust-mantle evolution, the short-lived 238U-230Th system, which promises new advances in understanding magma chamber systems of "active" volcanoes, and studies of mass-dependent isotopic fractionation of the first transition metals such as Cr, Fe, Ni, Cu, and Zn, which are becoming increasingly important in low-temperature geochemistry and geomicrobiology.

Because of stringent power, air quality, humidity, temperature, and exhaust requirements for the lab, the room 372 laboratory also has systems that are separate from the main building system.

Current research underway includes collaborative work with a number of research groups in the department, as well as other institutions, including: Isotope geochemistry of the first transition metals, which initially focuses on the metabolically important element Fe, and includes both field- and laboratory-based research into the mechanisms and extent of isotopic fractionation in inorganic, abiologic, and biologic systems; this new and analytically difficult work has important implications for tracing the origin and evolution of life on Earth and other planetary bodies. In addition to a major effort from our own group, departmental collaborations include work with the research groups of Professors Banfield, Bahr, Carroll, and Tikoff.