

It's a great pleasure to present to you this year's F.W. Clarke Medal honoree, Raj Dasgupta. He has won this award chiefly in recognition of his experimental contributions to understanding partial melting of carbonated lithologies in the mantle and their relationship to the deep Earth carbon cycle. As his Ph.D. advisor, nobody is more proud of his accomplishments or to see those accomplishments recognized.

Raj arrived as a graduate student at Minnesota having completed BSc and MSc degrees at Jadavpur University in Kolkata with great distinction. I knew immediately that Raj was exceptional – from the beginning it was impossible to conduct a brief meeting with him. We never ran out of things to talk about. For his MSc research he investigated a Proterozoic layered mafic intrusion and he was eager to combine experiments with field work. However, the direction that he headed at Minnesota, partially melting carbonated mantle rocks in the experimental lab, did not lend itself to field work. When Raj first arrived as a grad student, from time to time he would ask whether we could develop a field component to his project. Not wanting to discourage an eager student, I told him simply that we would decide later. Raj later told me that it took him about 2 years to realize that there wouldn't ever be any field component to his research.

As my students don't generally do fieldwork, the reward for accomplishment is instead to be able to go to a meeting in a nice place. When Raj had some of his first results, generating carbonatitic melts from carbonated eclogite, there happened to be a carbonatite workshop in the Canary Islands, including a field trip to see carbonatites in the field, so we agreed he should go. This reward did not start out well, as Raj was robbed in the street in Madrid en route, but I think he had a good experience, getting good feedback from a wide array of scientists and enjoying the field trip. Now, I have to be careful how I finish this anecdote. I assure you that both Raj and I value field research greatly – experimentalists and theoreticians contribute little or nothing to Earth science unless there are observations from the field against which to compare their results. But when Raj returned from this meeting and was telling me about it, one of the things he said was, "You know, Marc, many people doing field work get lost on second-order problems." It was THEN that I knew that Raj had become a true experimentalist.

And what an experimentalist he had become! His first project, partially melting carbonated eclogites was meant to be simply practice – nobody in my lab had ever worked with carbonated lithologies and so we thought we'd practice with carbonated eclogite before we moved on to his main project - carbonated peridotite. What we found is that working with carbonated materials is hard, but that Raj was more than up to the challenge. The "practice" resulted in 3 papers and fundamental constraints on the efficiency of carbon recycling into the mantle.

The principle project, partially melting carbonated peridotite, produced another 5 papers and contributed to such diverse problems as the origin of oceanic island basalts, deep melting in the upper mantle, the formation of the oceanic lithosphere, and the origin of mantle seismic discontinuities.

But most of all, between these two projects, Raj helped us understand the fundamental role of carbon in the mantle. At this meeting and around the world, there is now great effort regarding study of the deep Earth carbon cycle. Though many have contributed to this effort, Raj Dasgupta has done more than anyone to catalyze the excitement in this burgeoning frontier.

Since leaving Minnesota, Raj's contributions and efforts have only accelerated, at Lamont and now at Rice, he has expanded out, attacking a wide range of problems from the composition of the core to the thermal vigor of magmatism on Mars, with much of his focus on the role of carbon in planetary interiors. At Rice for just a few years, he has already built a large and productive group, demonstrating that we will not have to wait long for his early promise to yield extraordinary new contributions to geochemistry.

Ladies and Gentleman, I introduce to you, Rajdeep Dasgupta.