THE YOUNG SCIENTIST AWARD FOR 2000 TO GREGORY M. DIPPLE

Dr. Greg Dipple is Associate Professor of Metamorphic Petrology in the Department of Earth and Ocean Sciences at the University of British Columbia. He was awarded tenure and promoted to his present rank in 1999. The Department of Earth and Ocean Sciences at the University of British Columbia is fortunate to have him. Greg is emerging as one of the truly innovative scientists in North American petrology; he has the intellect and scientific curiosity to become one of the premier researchers in the field of high-temperature reactive transport.

Although the Young Scientist Award is primarily for research excellence, it is appropriate to comment on his effectiveness as teacher and mentor of students because students carry forward the research of their teachers and supervisors. He is recognized as an excellent lecturer, his undergraduate petrology course is considered a challenge and, although optional, attracts between 30 and 50 students each year. He always scores highly in teaching evaluations, and has been nominated for several faculty teaching awards. He is an excellent mentor to young researchers, as shown by the huge impact he has on students at field school, the success of his fourth year course on fluid flow and reactive transport (extremely quantitative), and the number of honours thesis students who come to him for support. Finally, he is sought by faculty and students alike to serve on graduate student supervisory committees for his expertise in both field and theory.

Greg's field of research is broadly Metamorphic Petrology. The current focus is on quantitative studies of the dynamics of fluid flow and mass transfer in hydrothermal systems, be they metamorphic or metallogenic. What makes his work novel is that his numerical modeling is coupled to the natural occurrences. His field observations provide him with the mineralogical and chemical signature of fluid flow. These field results are then combined with and interpreted through numerical models of coupled heat flow, fluid flow and mineral reactions. He has shown that it is the mineral reactions that create the complexity and the richness of metamorphic assemblages.

External evidence for Greg's excellence includes citations of his publications by other scientists. His citations by year, after excluding citations by self or coworkers, are 2 (1990), 12 (1991), 14 (1992), 28 (1993), 26 (1994), and 58 (1995). This would be an excellent record for anyone in the geological sciences, let alone a young professor.

Greg has over the past few years broadened the base of his research activities and has become an important player within the Mineral Deposits Research Unit (MDRU) at The University of British Columbia. He has cosupervised graduate students who are working on metallogenic thesis topics, taught courses on rock–water interaction for MDRU students, and is currently a coinvestigator on the "Magmatic–Hydrothermal" MDRU research grant. He has also received considerable funding from industry for petrological modeling studies of a wollastonite skarn deposit. All of these are signs that he can provide innovative solutions for practical problems related to ore deposits using his theoretical – computational – field skills. Broad research interests and abilities are the hallmark of excellence.

Ladies and Gentlemen, I take great pleasure in presenting to you this year's Young Scientist Medalist, Greg Dipple.

Bryan Fryer, President

I am honored, excited, and a little unnerved to be standing here today. I thank the Association for finding my research worthy of consideration and for serving as the home for Metamorphic Petrology in Canada. In these days of rapid technological innovation, this latter point is important, and I ask you to indulge a brief detour to examine it further.

I come from a schizophrenic discipline, but the glue that holds it together is the minerals that comprise our rocks. We are all aware that minerals define metamorphic textures and fabrics, record metamorphic temperature and pressure conditions, and host the isotopes that allow metamorphic and tectonic events to be dated, but let me draw on my own experience to emphasize that the value of studying metamorphic minerals extends much further. Mineral assemblages are one of many tracers employed in the study of fluid–rock interaction and metamorphic reactive transport. However, mineral assemblages are without equal in this analysis. Minerals are the host of and may modulate the behavior of geochemical and isotopic tracers. For example, it now appears that infiltration-driven mineral reactions may introduce hydrodynamic dispersion into what were once considered independent and isolated isotopic systems. Mineral assemblages can also retain information on the fluid pressure attending metamorphism. Mineral assemblages are the only tracer that can be routinely analyzed in the field, and that can be unambiguously linked to the elevated temperature and pressure conditions of metamorphism. Perhaps most importantly, mineral reactions interact physically with fluid infiltration by creating and destroying permeability and acting as local sources and sinks for volatiles. It is not an exaggeration to state that studies of fluid–rock interaction that neglect mineralogical and petrological analyses do so to their detriment.

Many people have encouraged and influenced my research to date, and I must acknowledge at least a few of them. My parents emphasized the importance of scholarship and encouraged my pursuits into the variety of disciplines that struck my fancy. Growing up in rural Ontario in the shadow of Algonquin Park all but ensured that these studies would include a field component. My Aunt Elizabeth, the first academic in our family, was an inspiring role model.

I first studied geology at Indiana University, where I worked with Bob Wintsch on metasomatism in a ductile fault zone located in Connecticut. From Bob I learned the value of careful petrographic observation and of linking these observations to a process. During graduate studies at Johns Hopkins University, I was surrounded by brilliant and generous scientists. I am particularly indebted to John Ferry, from whom I learned quantitative petrology, thermodynamics, and the importance of designing studies that use these tools to their full potential. Dimitri Sverjensky gave me the geochemical expertise to expand these studies into the realm of metasomatism, and Carol Simpson tried to keep me honest when I did this in deformed rocks. I was truly fortunate to have overlapped with Lucas Baumgartner while he was a postdoc at Hopkins. Witnessing the birth of a revolution in the petrological analysis of fluid–rock interaction remains a highlight of my career. Of the many exceptional students I worked with at Hopkins, Greg Symmes stands out as a constant companion, an insightful critic, and a thoughtful late-night sounding board.

In 1992, I moved to Australia to study as a postdoc with Nick Oliver at Monash University. Nick is an exceptional field geologist and by begging and scheming I managed to spend several months of that year in the field with him. Those months have had enormous impact on my subsequent studies in British Columbia. Nick also taught me that modern petrographic techniques are as applicable to the study of mineralized systems as they are to unmineralized ones.

During the past seven years I have had the good fortune to be a part of a young, dynamic group of solid earth geologists at the University of British Columbia. Perhaps the most important trait of an academic faculty is to have colleagues with whom to share ideas and pursue collaborative research, and I have had these opportunities in such abundance that I have not been able to take full advantage of them. Kelly Russell deserves special mention as the architect chiefly responsible for building this team.

Lastly, I acknowledge the love, support, and indulgence of my wife Vicki and, more recently, the wonderful sense of perspective provided by my daughters Ellen and Johanna.

Greg M. Dipple
University of British Columbia

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