Foreword

All geochemical analyses were done by the author unless specified below. All the chapters of this thesis have multiple authors. The author’s participation and contribution to the research is as follows:

Part I of this thesis is presented as chapters 2, 3, and 4. The rocks analyzed for these three chapters were collected by the author, her advisor Dr. Basu, and Dr. Wakabayashi of California State University at Fresno. Major element analyses were carried out by a commercial laboratory (Act Labs) in Canada. Chapter 2 is a published paper by J. Wakabayashi, A. Ghatak and A. R. Basu in Geological Society of America Bulletin, 2010. Chapter 3 has been submitted by A. Ghatak, A. R. Basu, and J. Wakabayashi for publication in the Geological Society of America Bulletin in May, 2010. Chapter 4 is a paper by A. Ghatak, A. R. Basu, and J. Wakabayashi, in preparation to be submitted to the journal Geology. Dr. Basu helped with interpretation of the geochemical data, and Dr. Wakabayashi helped with the understanding of the regional geology and tectonics of the study area.

Chapter 5 is a paper in preparation by A. Ghatak and A. R. Basu, to be submitted to Earth and Planetary Science Letters. Samples for this study were collected by the author and Dr. Basu. Trace element analyses were carried out by the author at the University of Rochester (Chemical part) and the University of Massachusetts, Boston (instrumentation part) under the supervision of Dr. Robyn Hannigan. Dr. Basu’s guidance and advice throughout this project and on numerous
versions of the chapter was crucial in reaching a complete understanding of the subject of this paper.

Chapter 6 will be submitted by A. Ghatak, A. R. Basu, and C. J. Ebinger in Geology in August, 2010. Samples for this study were collected by Dr. Ebinger and her field team in Ethiopia, assisted by Dr. Yirgu. Major element analyses were carried out by a commercial laboratory (Act Labs) in Canada. Trace element analyses were carried out by the author in the University of Rochester (Chemical part) and the University of Massachusetts, Boston (instrumentation part) under the supervision of Dr. Robyn Hannigan. Dr. Basu and Dr. Ebinger made substantial contributions in the writing of this paper.

For Chapters 7 and 8, samples were provided to us by the Geological Survey of India. Chapter 7 has been submitted as a paper by A. Ghatak and A. R. Basu in Earth and Planetary Science Letters in June, 2010. Chapter 8 is in preparation to be submitted to Geochimica et Cosmichimica Acta by A. Ghatak and A. R. Basu. Dr. Basu’s insightful interpretation of the geochemical data was vital to the completion of these two closely related projects.