Imperial Personal Statement

Our lectures last year introduced me to rock and paleomagnetism and I instantly found them fascinating subjects. Exploring the literature and current research beyond the reading list introduced me to the application of the subject to meteorites and I found it incredibly exciting that paleomagnetic measurements of meteorites can give us insight into the events experienced by both them and their parent bodies such as proto-planetary impacts and internally generated dynamos. A seminar given by Roger Fu highlighted the importance of paleomagnetic measurements of meteorites as currently, astronomical observations of other young solar systems are not able to constrain the nature of solar nebula fields which are predicted to influence the rate of mass and angular momentum transfer in the early evolution of solar systems.

I believe I am a suitable candidate for this project for several reasons. I am passionate about this subject and I am taking a further course this year on the magnetism of the Earth and planetary materials as well as courses on cosmochemistry and magnetoelastic coupling in minerals to further my knowledge about this subject. I also believe that my background in physics (I took both Physics options for my Pt IB) will greatly aid the project. My physics training has given me the confidence and the mathematical toolbox to be able to take complex problems and create models which capture the key elements of the problems whilst being aware of any assumption made and the implications of these for the model results. The practical labs we had as part of these courses gave me valuable experience in designing and running my own experiments to a time deadline, dealing with experimental uncertainties and critically evaluating the results. I scored very highly in these aspects of both Physics courses: 82% and 88% in Physics A and B respectively. As already mentioned, my Pt III project required extensive computing modelling - mainly in FORTRAN 77 but I also have experience in C++ from Pt IB Physics - and I am more than comfortable with writing and running complex codes such as one which solved the Stefan problem for the melting and refreezing of a sub-surface ocean on Mimas, the moon that was the focus of my project. I believe that the combination of this skill base with my ability in the Earth Sciences will enable me to complete this project successfully and contribute to the existing literature and paleomagnetic community.