

Reghan J. Hill in his capacity as Principal Investigator and research supervisor guided the research that is reported in this thesis, including an additional body of electrokinetic sonic amplitude studies, performed by Mr Morunov, on emulsions from oil-sands dewatering (kindly provided by Imperial Oil Limited). RJH edited preliminary drafts of chapters 1-4, but the entire thesis is presented as the author's own work. P. Servio approved the submission of the thesis in his capacity as an administrative supervisor, with no claims to co-authorship.

RJH wishes to acknowledge the following additional contributions: Mr G. Afuwape and Dr V. Adibnia provided instruction and training for Mr Morunov to perform electrokinetic-sonic-amplitude measurements on emulsions from oil-sands electro-dewatering operations; these motivated the reported surface-tension studies. Dr C. Du performed accompanying dielectric relaxation spectroscopy, and S. Sayegh performed early rheological analysis. Ms S. Athar helped to optimize the surface-tension measurement protocols adopted in this thesis. Mr J. Kaye performed an asphaltene extraction, and initiated the asphaltene-precipitation and solubility studies as a SURE research project in 2018.

RJH gratefully acknowledges the funding for this research from an NSERC Engage Grant and an Imperial Oil University Research Award (with two renewals). RJH also acknowledges the guidance and support of Dr S. Mercer, Imperial Oil Limited, who also provided brine emulsions from electro-dewatering, and bitumen for the asphaltene extractions reported in this thesis.