UNIVERITY OF CALGARY

DEPARTMENT OF CHEMISTRY

COURSE SYLLABUS

FALL 2018

COURSE: CHEM 571 Physical Chemistry of Interfaces

Chapter 1. Introduction

- What are interfaces?
- Importance and applications of interfacial chemistry

Chapter 2. Surface Tension, Surface Energy, and Thermodynamics of Interfaces

- Surface Tension and surface energy
- A Molecular-level Picture of Surface Tension
- Intermolecular Forces
- Van der Waals Forces between Macroscopic Particles
- Thermodynamics of Interfaces

Chapter 3. Liquid Surfaces, Contact Angle, and Wetting

- Liquid Surfaces - Introduction
- The Young-Laplace Equation – Curvature of Liquid Surface
- Contact Angles and Wetting
- Measuring the Surface Tension and Contact Angles
- The Vapor Pressure of a Liquid Surface – the Kelvin Equation

Chapter 4. Solid Surfaces Part I – Crystalline Surface

- Crystalline surfaces
- Surface Relaxation and Reconstruction
- Solid Surface Defects

Chapter 5. Solid Surfaces Part II – Adsorption

- Physisorption and Chemisorption
- Adsorption Isotherms
- Measuring Adsorption on Solid Surfaces

Chapter 6. Surface Analysis Techniques and their Applications

(Including student poster presentations)

- An Overview
- X-ray Photoelectron Spectroscopy
- Auger Electron Spectroscopy

Department Approval: Approved by Department Head Date: August 30, 2018