

HOMEWORK 10

Optical Indicatrix and Interference Colors

Suppose a mineral has a retardation of 475 nm. What interference color would this produce? 1) _____ (order & color) If this mineral is examined with a 1° red accessory plate and the fast directions of the plate and the mineral are parallel, what is the retardation? 2) _____ What color would this correspond to? 3) _____ If the fast directions are perpendicular, what will the retardation equal? 4) _____ What color would this correspond to? 5) _____

Suppose a mineral has a retardation of 250 nm. What interference color would this produce? 6) _____ If this mineral is examined with a quarter- λ accessory plate and the fast directions of the plate and the mineral are parallel, what is the retardation? 7) _____ What color would this correspond to? 8) _____ If the fast directions are perpendicular, what will the retardation equal? 9) _____ What color would this correspond to? 10) _____

If a mineral has $\epsilon = 1.833$ and $\omega = 1.799$, what is **the** birefringence? 11) _____ Is the mineral isometric, uniaxial, or biaxial? 12) _____ What is the optical sign? 13) _____ How many axes does this indicatrix have? 14) _____ What is the shape of the indicatrix (be specific)? 15) _____
16) Assuming you are looking at a grain mount of this mineral mounted in Canada balsam, what type of relief would you see? _____
17) Show math for # 16

