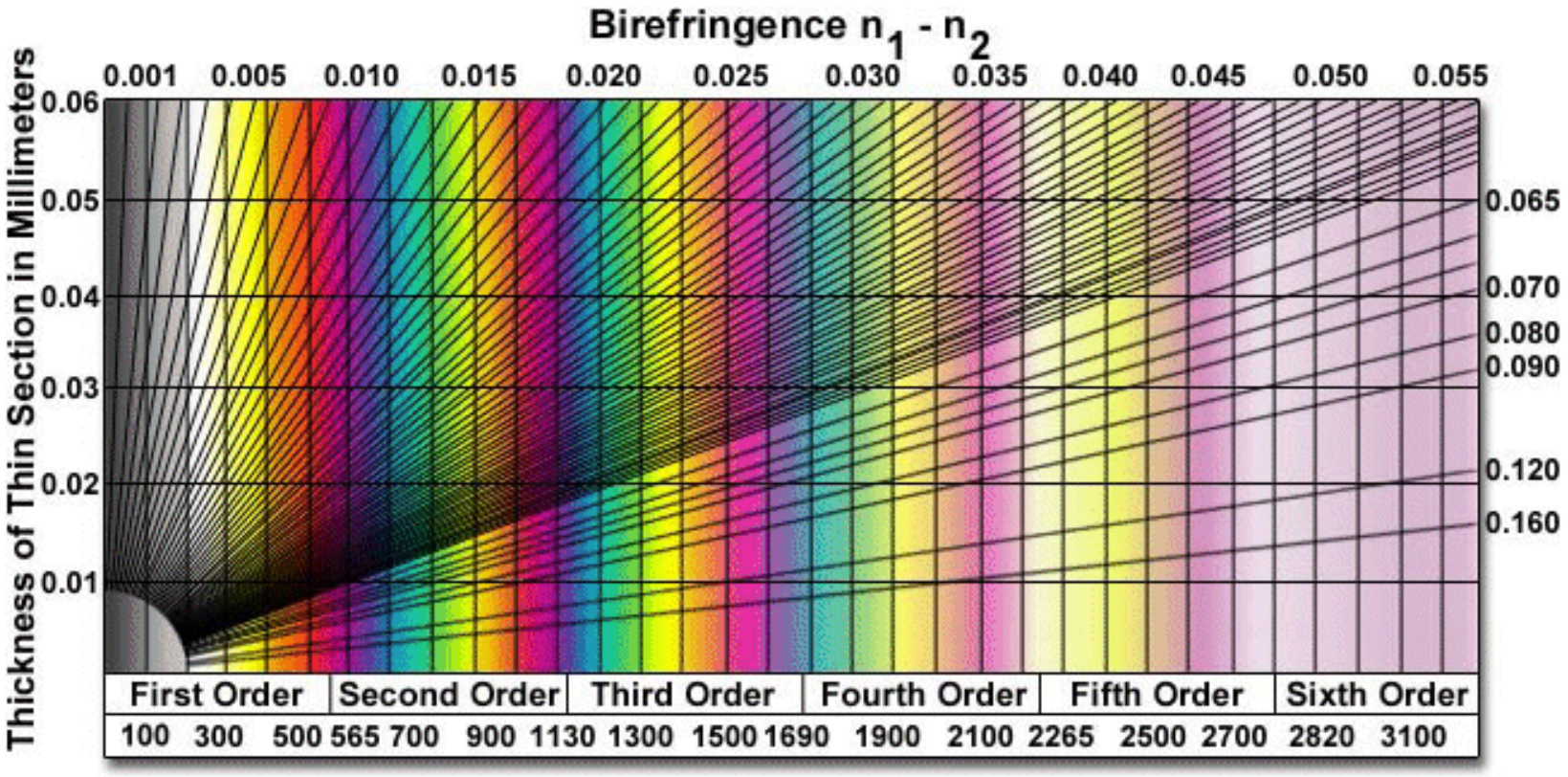
Birefringence $n_1 - n_2$
0.001 0.005 0.010 0.015 0.020 0.025 0.030 0.035 0.040 0.045 0.050 0.055
Thickness of Thin Section in Millimeters
0.06
0.05
0.04
0.03
0.02
0.01
0.065
0.070
0.080
0.090
0.120
0.160
First Order
Second Order
Third Order
Fourth Order
Fifth Order
Sixth Order
100 300 500 565 700 900 1130 1300 1500 1690 1900 2100 2265 2500 2700 2820 3100

GLY 4200 NAME_____

HOMEWORK 10

Optical Indicatrix and Interference Colors

Suppose a mineral has a retardation of 475 nm. What interference color would this produce? 1) 1° orange (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) 1025 nm What color would this correspond to? 3) 2°red If the fast directions are perpendicular, what will the retardation equal? 4) 75 nm What color would this correspond to? 5) 1° gray

Suppose a mineral has a retardation of 250 nm. What interference color would this produce? 6) 1° white 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) 400 nm What color would this correspond to? 8) 1°orange-yellow If the fast directions are perpendicular, what will the retardation equal? 9) 100 nm What color would this correspond to? 10) 1° gray-white

If a mineral has ε = 1.833 and ω = 1.799, what is **the** birefringence? 11) 0.034 Is the mineral isometric, uniaxial, or biaxial? 12) Uniaxial What is the optical sign? 13) Positive How many axes does this indicatrix have? 14) Two What is the shape of the indicatrix (be specific)? 15) Prolate ellipsoid

16) Assuming you are looking at a grain mount of this mineral mounted in Canada balsam, what type of relief would you see? Very high

17. Show math for # 16

Average = 1.816 1.816 - 1.54 = 0.28