**Thin Film Interference & Other Bits of Joy and Intrigue.**

1. A thin film of canola oil, n=1.44, floats on a puddle of water, n=1.33. Find the second minimum thickness of the oil layer such that light with a wavelength of 622nm interferes constructively.

2. A compact disk has a thin coating of surface treatment, n=1.80, sprayed on a reflective mirror. Find the minimum thickness of the film so that the film appears red due the destructive interference of green light, λ=550nm.

3. A Michelson interferometer counts 12000 zeros as the mirror is moved by 1.20mm. What is the wavelength of the light used?

4. A soap bubble floats through the air. An observer sees a rainbow swirl pattern in the surface of the bubble. Find the third minimum thickness of the bubble at a point where 466nm light interferes constructively.

5. A thin film of gasoline (n=1.20) floats on a pool of water (n=1.33). What is the thinnest the film could be to allow constructive interference of light with a wavelength of 520nm in air.

6. A thin film of glycerine is on the surface of a smooth white sheet of plastic. When viewed from above an observer notices blue/purple swirls due to destructive interference of red light (660nm). Find the TENTH thinnest possible layer of this film.

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