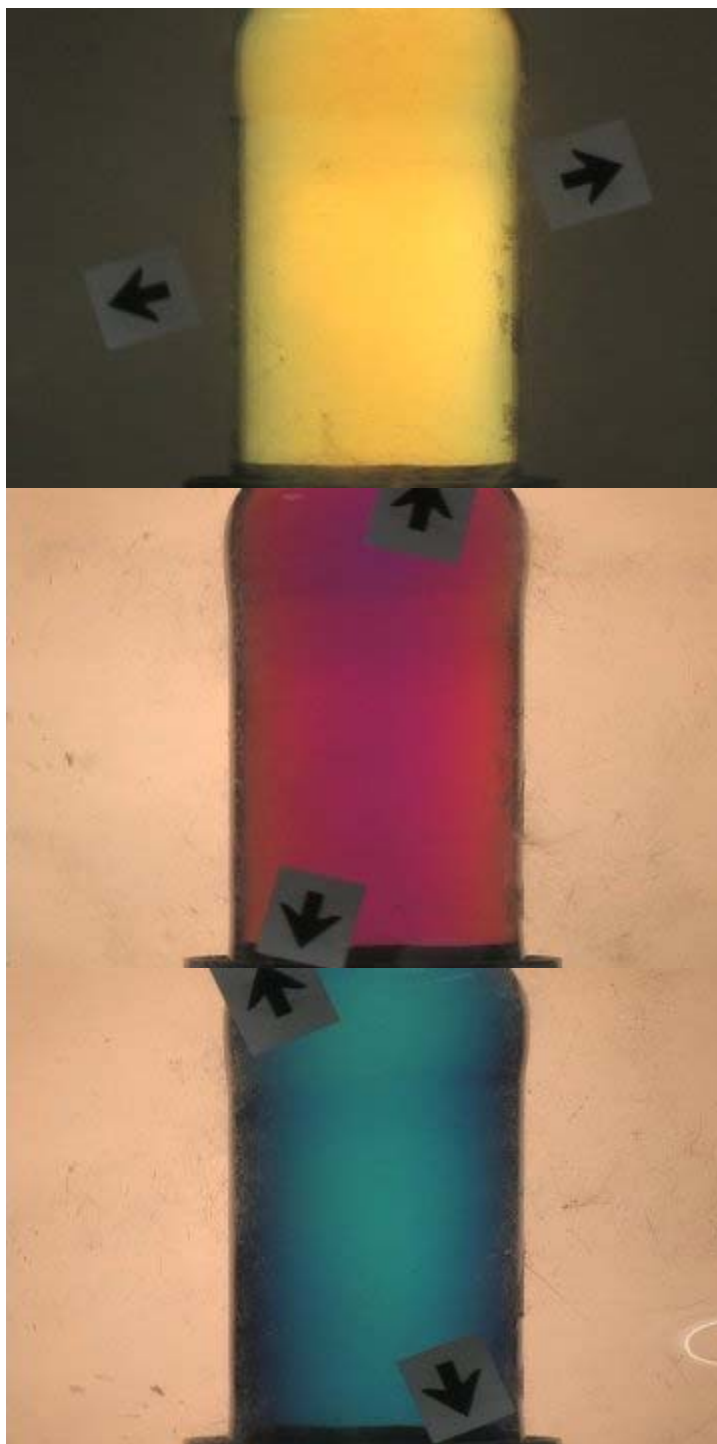


Answer #287

The answer is (e) magenta and (d) cyan, as seen in an mpeg video by clicking your mouse on the photograph at the left below.



Karo[®] syrup is an optically active material, due to the left-handed chirality of its molecules when long molecules are formed. This causes the plane of polarization of the light to rotate counterclockwise (viewed from the front) as light progresses through the syrup. This involves a scattering process, so

the amount of rotation is wavelength dependent, with the blue rotating more rapidly than the green, which rotates more rapidly than the red.

As the polaroid is rotated, it blocks a small group of wavelengths in the blue region, creating the negative color, white - blue, which is non-spectral yellow. Further rotation blocks the green, creating magenta, which is always non-spectral. Further rotation then blocks the red, creating non-spectral cyan.

An excellent discussion of this process is found in the Feynman Lectures on Physics, volume 1, section 33-5, on optical activity created by molecular shape.

[Archive 15](#)

[Question of the Week](#)

[Outreach Index Page](#)

[Lecture-Demonstration Home Page](#)



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