Key Terms

differential interference contrast (DIC) separating a polarized light source into two beams polarized at right angles to each other and coherent with each other then, after passing through the sample, recombining and realigning the beams so they have the same plane of polarization, and then creating an interference pattern caused by the differences in their optical path and the refractive indices of the parts of the sample they passed through; the result is an image with contrast and shadowing that could not be observed with traditional optics

diffraction bending of a wave around the edges of an opening or an obstacle

diffraction grating many of evenly spaced slits having dimensions such that they produce an interference pattern

Huygens's principle Every point on a wavefront is a source of wavelets that spread out in the forward direction at the same speed as the wave itself; the new wavefront is a line tangent to all of the wavelets.

iridescence the effect that occurs when tiny, fingerlike structures in regular patterns act as reflection gratings, producing constructive interference that gives feathers colors not solely due to their pigmentation

laser acronym for a device that produces *light amplification by stimulated emission of radiation*

monochromatic one color

monochromator device that separates the various wavelengths of incoming light and allows a beam with only a specific wavelength to pass through

Rayleigh criterion two images are just resolvable when the center of the diffraction pattern of one is directly over the first minimum of the diffraction pattern of the other

resolution degree to which two images can be distinguished from one another, which is limited by diffraction

wavefront points on a wave surface that all share an identical, constant phase