

Q:

Why does refracting prism separate colors and not water, is it because of the material, or because rays enter but also exit? find out.

A:

"Although the refractive index is dependent on the wavelength in every material, some materials have a much more powerful wavelength dependence (are much more dispersive) than others. Crown glasses such as BK7 have a relatively small dispersion, while flint glasses have a much stronger dispersion (for visible light) and hence are more suitable for use in dispersive prisms. Fused quartz is used in the ultraviolet as normal glasses lose their transparency there.

The top angle of the prism (the upper corner in the accompanying picture) can be chosen to influence the exact dispersion characteristics. However, it is typically chosen such that both the incoming and outgoing light rays hit the surface approximately at the Brewster's angle, so that reflection losses are minimized. An example is the use of this type of prisms in prism compressors for generation of ultrafast laser pulses."

Also see <http://www.filmetrics.com/refractive-index-database> (For each material a graph of the index as a function of wavelength)

It seems to me that Hooke simply did not take the color matter seriously, maybe he was happy enough about his refraction index / wave explanation.

newton tried to change the colors again, not, make them white again. my previous thought comes from the observation that hooke surely must have / could have tried this as well.

"He altogether renounced the attempt to construct the universe from its foundations after the fashion of Descartes, and aspired to nothing more than a formulation of the laws which directly govern the actual phenomena. His theory of gravitation, for example, is strictly an expression of the results of observation, and involves no hypothesis as to the cause of the attraction which subsists between ponderable bodies; and his own desire in regard to optics was to present a theory free from speculation as to the hidden mechanism of light. Accordingly, in reply to Hooke's criticism, he protested* that his views on colour were in no way bound up with any particular conception of the ultimate nature of optical processes. Newton was, however, unable to carry out his plan of connecting together the phenomena of light into a coherent and reasoned whole without having recourse to hypotheses. The hypothesis of Hooke, that light consists in vibrations of an aether, he rejected for reasons which at that time were perfectly cogent, and which indeed were not successfully refuted for over a century. One of these was the incompetence of the wave theory to account for the rectilinear propagation of light, and another was its inability to embrace the facts discovered, as we shall presently see, by Huygens, and first interpreted correctly by Newton himself of polarization. On the whole, he seems to have favoured a scheme of which the following may be taken as a summary:"

I should make a list of these aether 'theories' each summarized like the one above.

"The truth of Hooke's hypothesis, that light is essentially a form of motion, seemed to Huygens

to be proved by the effects observed with burning-glasses; for in the combustion induced at the focus of the glass, the molecules of bodies are dissociated; which, as he remarked, must be taken as a certain sign of motion, if, in conformity to the Cartesian philosophy, we seek the cause of all natural phenomena in purely mechanical actions."

"The question then arises as to whether the motion is that of a medium, as is supposed in Hooke's theory, or whether it may be compared rather to that of a flight of arrows, as in the corpuscular theory. Huygens decided that the former alternative is the only tenable one, since beams of light proceeding in directions inclined to each other do not interfere with each other in any way."

"Moreover, it had previously been shown by Torricelli that light is transmitted as readily through a vacuum as through air; and from this Huygens inferred that the medium or aether in which the propagation takes place must penetrate all matter, and be present even in all so-called vacua"

Q:

Is the above true?

A:

"the refractive index of air for visible light is about 1.0003, so the speed of light in air is about 90 km/s slower than c."

"It may be remarked that Huygens "'waves" are really what modern writers, following Hooke, call "pulses"; Huygens never considered true wave-trains having the property of periodicity"

Note. The description of is rather summarized in the book. Here are some helpful links on the topic:

<http://www.trueanomalies.com/tribo-what/>

<http://itp.nyu.edu/~ndl5/electricity/pages/leyden.html> <https://eee.uci.edu/clients/bjbecker/RevoltingIdeas/week7k.html>

http://books.google.de/books?id=QkNKAAAAYAAJ&pg=PA412&lpg=PA412&dq=phial+of+water+gun+barrel+electricity&source=bl&ots=_ejNyJYFal&sig=gSEnk_EK9hdc5bZVzoHFFI-

[_vGs&hl=en&sa=X&ei=AoeLUdnxMqjU4QSFnYCADw&redir_esc=y#v=onepage&q=phial%20of%20water%20gun%20barrel%20electricity&f=false](http://books.google.de/books?id=QkNKAAAAYAAJ&pg=PA412&lpg=PA412&dq=phial+of+water+gun+barrel+electricity&source=bl&ots=_ejNyJYFal&sig=gSEnk_EK9hdc5bZVzoHFFI-_vGs&hl=en&sa=X&ei=AoeLUdnxMqjU4QSFnYCADw&redir_esc=y#v=onepage&q=phial%20of%20water%20gun%20barrel%20electricity&f=false)

http://en.wikipedia.org/wiki/Leyden_jar

<http://brianaltonenmph.com/6-history-of-medicine-and-pharmacy/hudson-valley-medical-history/1795-1815-biographies/quaker-shadrach-ricketson-md/medical-electricity/>

<http://www.sciencedirect.com/science/article/pii/S0160932707000531>