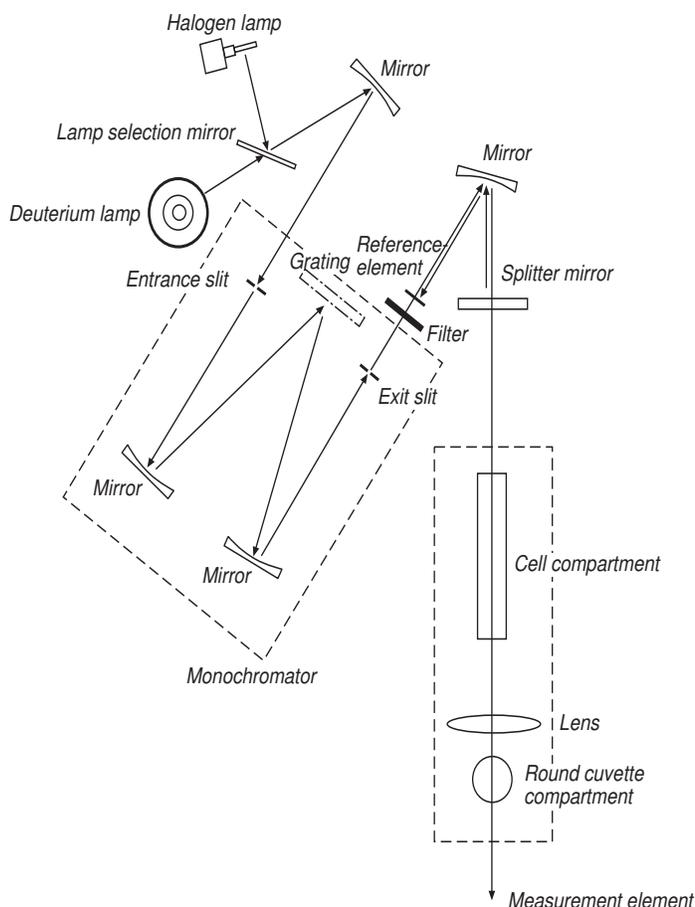


SPLIT BEAM VS SINGLE BEAM OPTICS

Split Beam Optics

Split beam optics also known as ratio beam or dual beam, imparts greater accuracy and reproducibility than conventional single beam optics. The absorbance signal in conventional single beam instruments can destabilize even during simple applications thus resulting in data inaccuracy. By contrast, split beam optics compensates and stabilizes any signal fluctuations to increase accuracy and reliability even over prolonged usage such as in time course and kinetic measurements.

The split beam principle involves splitting the beam generated by the light source by a half mirror. One of the split beams passes through the sample and is quantified by a detector whereas the other split beam which is representative of the absorbance signal is measured by an independent detector to obtain a signal reference. The ratio of the values from both detectors is then calculated to detect and compensate for any aberration in the energy of the light source of a temporal change of the optical elements and produce the highly stable photometric values. Therefore, highly stable photometric values are obtainable. This always ensures reliable results even in long-time measurement.

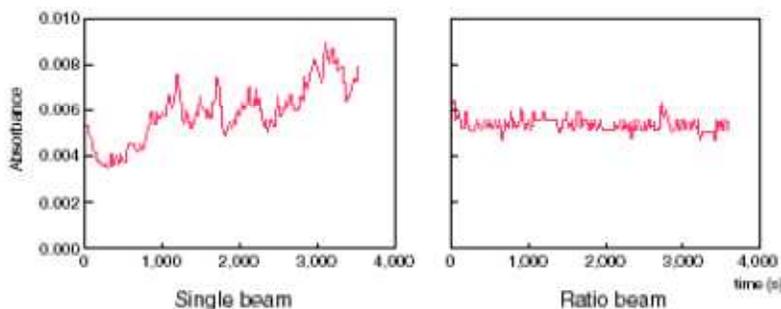


DR5000 UV-Vis Split beam Spectrophotometer optics

All Hach spectrophotometers including Model DR5000, DR3900, DR2800, DR2700 are based on split beam optics as shown in above figure.

Superiority of Split/Ratio Beam Optics

Shown here is the difference in lamp stability between single beam and split/ratio beam optics. In single beam optics, the absorbance signal becomes unstable with the lapse in time. By contrast, the absorbance signal is stable for a long time in the split/ratio beam optics where change in the light source is compensated.



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