

BV Laser
Application Notes

DNA Sequencing

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DNA sequencing is a method for decoding the bond order (base sequence) of the four bases which comprise DNA: adenine (A), thymine (T), guanine (G) and cytosine (C).

The basic principles are described below:

1. Using cut enzymes which correspond to the four bases, DNA strands of varying length are manufactured for analysis.
2. The ends of the strands are marked with fluorescent substances corresponding to the respective base: A, T, G and C.
3. When capillary electrophoresis is performed on the DNA strands, properties which migrate sequentially from the shortest DNA strand are used, and resequenced from the shortest one.
4. A laser light is directed at the migrated DNA strands, and the original base sequence can be determined by detecting the fluorescence from the fluorescent-labeled bases (the base sequence is known because the ends of the bases of the cut strands become manifest from the front).

Automatic, high-speed DNA analysis is possible with capillary electrophoresis and laser excitation.

For the BV laser, generally a 488 nm-laser is used, but lasers of other wavelengths can be used to match the fluorescence reagent.

