

## Demonstrating Brownian motion

## Transcript

The basic understanding that gases consist of moving molecules which collide is called kinetic theory. Robert Brown visualised this movement in 1827, and this experiment will use a smoke cell to replicate the type of observations he made.

The smoke cell is connected to a power supply. This type of smoke cell contains a lamp and lens built in.

The lens focuses light from the lamp through a chamber containing smoke.

A paper straw is used to generate a sample of smoke.

The smoke cell is filled and a cover slip is immediately placed on it.

Care is taken to extinguish the lit straw and dispose of it safely.

The smoke cell is positioned under a microscope and brought into focus at a low magnification.

When the image is brought into focus, it is possible to view the individual smoke particles as tiny specks.

Observations can be made of the way in which the smoke particles move.

They appear to move randomly with a jerky motion. This movement can be explained due to the effect of air molecules on the smoke particles.

On closer inspection, the motion of the particles can be seen to be made up of many small sections of linear movement. This is known as Brownian motion.

The changes in direction of travel are caused due to collisions between the smoke particles and air molecules.

By observing the movement of smoke particles, it has been possible to infer the motion of invisible air molecules.