

The development of a mathematical model to describe the interaction of sprinkler sprays with fire gases has indicated the need for experimental data to characterise droplets from sprinkler sprays.

A new experimental technique based on high speed cine photography using a metal vapour laser light source for measuring particle sizes, velocities and angle of flight has also been developed at South Bank Polytechnic, London.

This has proved to be a very successful technique for image capture. Image analysis can be carried out by a number of techniques. The quickest is a digital image processing package developed at the University of Cambridge.

Brandforsk (the Swedish Fire Research Board) offered a short-term contract to the South Bank Polytechnic to carry out a feasibility study into using the new experimental technique for examining water droplets from a small number of sprinkler spray heads.

A simplistic sprinkler arrangement (absence of ceiling) was installed in the Hydraulics Laboratory at the Fire Research Station, Borehamwood and a number of films taken by the South Bank Polytechnic team. The position of the sample volume within the spray was varied in relation to height and width from the sprinkler plate and to the angle of the yoke arm of the spray head. A small range of water pressures (flow rates) was also considered.

The preliminary results from this feasibility study indicate that both image capture and analysis are successful with regard to the application.