

# 33<sup>rd</sup> Scottish Fluid Mechanics Meeting

## **Seeding Particles in Experimental Fluid Dynamics**

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### **Abstract**

Modern experimental fluid mechanics measurement techniques, such as Particle Image Velocimetry (PIV) and Laser Doppler Anemometry (LDA), are based on tracking either naturally occurring or artificially added seeding particles.

The accuracy of the velocity measurement by these techniques can be directly linked to the physical properties of both seeding particles used and the investigated fluid. An appropriate selection of seeding particles to a given experimental condition can be estimated by a number of parameters, for example a Stokes number, velocity lag; and a cut-off frequency. These parameters are typically used to assess the tracking accuracy of seeding particles. Experimental set-up parameters, on the other hand, can give an insight into the expected signal-to-noise ratio of the proposed measurements. These parameters include camera settings; geometric orientation of the experiment; particle size; refractive index of both the particles and the fluid.

The influence of the essential parameters on the measurement accuracy as well as imaging quality will be discussed. This information will provide a simple guideline that will allow for selection of appropriate particles for planned measurements and to calculate important seeding particle parameters.