SEMS: RESEARCH PROJECT DESCRIPTION

Project 3

1. Project Background and Description

A project title and description with clear aims (300 words)

Holographic Velocimetry of Liquid Droplets

The aim is to develop a Holographic system to study the dynamics of liquid droplets at the nanometer scale. The project is focused on laser science and fluid mechanics. The ideal candidate would have a degree in natural sciences or engineering, e.g. Physics or Mechatronics. The plan is to first develop the holographic setup using a 532 nm laser and then couple it to high-speed imaging. The analysis will be implemented in Matlab to extract the 3D information from the hologram. The system will then be used to study the breakup of liquids at scales not currently available by conventional methods.

2. Project Scope

1. *Develop a holographic system to study droplets at the nanometer scale*
2. *Develop a droplet generator to study droplet creation at the nanometer/nanosecond scales*
3. *Apply the findings/experimental protocols on the study of 3D printed structures, including cells.*

3. Desired Skills from the Student

A. *Basic background in optics and lasers is desired but not compulsory.*

B. *Experience in Laboratory work (physics or engineering) would be advantageous.*

C. *Interest in experimental physics and engineering. A good degree in Engineering, Biochemistry, or Physics.*

D. *Experience writing reports and/or scientific papers would be advantageous.*

4. Supervisory Team

Add supervisory team details

Primary: Jose Rafael Castrejon-Pita (S. Lecturer, PhD).

Secondary: Yi Sui (SEMS)

Additional: (Name (inc title)/ department or company if outside SEMS).