

## **I. Introduction**

### **A. Applications**

Motivation for research and applications related to the subject.

### **B. Organization**

Explain organization of the report, what is included, and what is not.

## **II. Literature Survey**

### **A. Experimental Work**

Literature describing experiments with something in common with my experiment. My experiment is subdivided into section relating to each aspect of the whole.

#### **1. Drop Delivery**

Literature relating to the production of droplets.

##### **a. Continuous**

Continuous drop production methods, i.e. jet methods.

##### **b. Drop on Demand**

Drop on demand methods, i.e. ink jet devices. Produce drops whenever needed, simplifies control of frequency.

##### **c. Flexibility**

Best methods in terms of flexible velocities, volumes, and frequencies.

##### **d. Control Circuitry**

Circuitry necessary to control the drops, may include control of generation, size, and frequency. Divertors and drop chargers.

##### **e. Extensibility**

Methods extensible to 2D applications.

##### **f. Recirculation**

Recirculation techniques, pump, none, capillary.

#### **2. Instrumentation**

Literature dealing with measurement of various parameters.

##### **a. Temperature**

###### **(1) Heater Surface**

###### **(2) Fluid Temperature**

###### **(3) Heat Flux**

###### **(4) Heat Transfer Coefficient**

##### **b. Drop Characteristics**

###### **(1) Size**

###### **(2) Velocity**

###### **(3) Frequency**

#### **3. Heating Element**

Literature dealing with the heating element. Material properties, surface properties, heat sources.

- a. **Material**
- b. **Heat Source**

**B. Analytical Work**

- 1. **Evaporation**
- 2. **Boiling**
- 3. **Leidenfrost Temperatures**
- 4. **Heat Transfer**
- 5. **Numerical Analysis**
  - a. **Drop Characteristics**
  - b. **Surface Wetting**
  - c. **Transient Temperatures**

**III. Proposed Research**

- A. **Experimental Work**
- B. **Analytical Work**