Supplementary Material

# Supplementary Data

# Supplementary Figures and Tables

## Supplementary Figure







**Supplementary Figure 1.** Change of the outlet void fraction with time of different working conditions (0~13.8s). (a) Condition 1; (b) Condition 2; (c) Condition 3.



**Supplementary Figure 2.** Physical picture of the test section.



**Supplementary Figure 3.** Schematic diagram of the SGD-Momentum algorithm. (A) SGD without momentum. (B) SGD with momentum



**Supplementary Figure 4.** The development process of bubbles in the narrow channel. (**A**) Schematic diagram of the bubble generation from the narrow side of the channel. (**B**) Schematic diagram of the bubble development from the narrow side of the channel. (**C**) Development of bubbles over time.

****Supplementary Table 1****．The FCN network layer parameters.

|  |  |  |  |
| --- | --- | --- | --- |
| Layer | Size | Layer | Size |
| Conv1-1 | 3×3×64 | Conv5-1 | 3×3×512 |
| Conv1-2 | 3×3×64 | Conv5-2 | 3×3×512 |
| Maxpooling | 2×2 | Conv5-3 | 3×3×512 |
| Conv2-1 | 3×3×128 | Maxpooling | 2×2 |
| Conv2-2 | 3×3×128 | Deconv1 | 3×3×512 |
| Maxpooling | 2×2 | Deconv2 | 3×3×256 |
| Conv3-1 | 3×3×256 | Deconv3 | 3×3×128 |
| Conv3-2 | 3×3×256 | Deconv4 | 3×3×64 |
| Conv3-3 | 3×3×256 | Deconv5 | 3×3×32 |
| Maxpooling | 2×2 | Classifier | 1×1×2 |
| Conv4-1 | 3×3×512 |  |  |
| Conv4-2 | 3×3×512 |  |  |
| Conv4-3 | 3×3×512 |  |  |
| Maxpooling | 2×2 |  |  |