Figure Captions

Fig. 1. The computational domain.

Fig. 2. Time evolution for the two colliding droplets, case A (view angle XZ plane), (We=70.8, Re=327.7, B=0.25).

Fig. 3. Details of the time evolution of the "donut" shape formation of the two colliding droplets for case A, (We=70.8, Re=327.7, B=0.25).

Fig. 4. Velocity field for case A at different times, (We=70.8, Re=327.7, B=0.25).

Fig. 5. Gas bubbles (white spots) inside the merged droplet, for cases (a) A, (b) B and (c) C, (A: (We=70.8, Re=327.7, B=0.25); B: (We=60.1, Re=302.8, B=0.55); C: (We=60.8, Re=313.7, B=0.68)).

Fig. 6. Time evolution for case B using three and four levels of local refinement (view angle XZ plane), (We=60.1, Re=302.8, B=0.55).

Fig. 7. Velocity field for case B at different slices, (We=60.1, Re=302.8, B=0.55).

Fig. 8. Time evolution for case C (view angle XZ plane), (We=60.8, Re=313.7, B=0.68).

Fig. 9. Velocity field for case C at different slices, (We=60.8, Re=313.7, B=0.68).

Fig. 10. Time evolution of basic merged droplet's for cases A, B and C, until ligament's detachment for cases B and C.

Fig. 11. (a) Time evolution of the maximum liquid velocity for cases A, B and C, (b)'End pinching' mechanism for case B and (c) time evolution of pressure at the ligament's neck region, (We=60.1, Re=302.8, B=0.55).

Fig. 12. Stretching separation for cases (a) B and (b) C, (B: We=60.1, Re=302.8, B=0.55); C: (We=60.8, Re=313.7, B=0.68)).

Table I. Test cases examined

Table II. Calculation of the critical impact parameter B_{cr}, by various models for cases A, B and C.