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5. Visualization of Separation Points and Wake at Smooth Ball and Dimpled Balls

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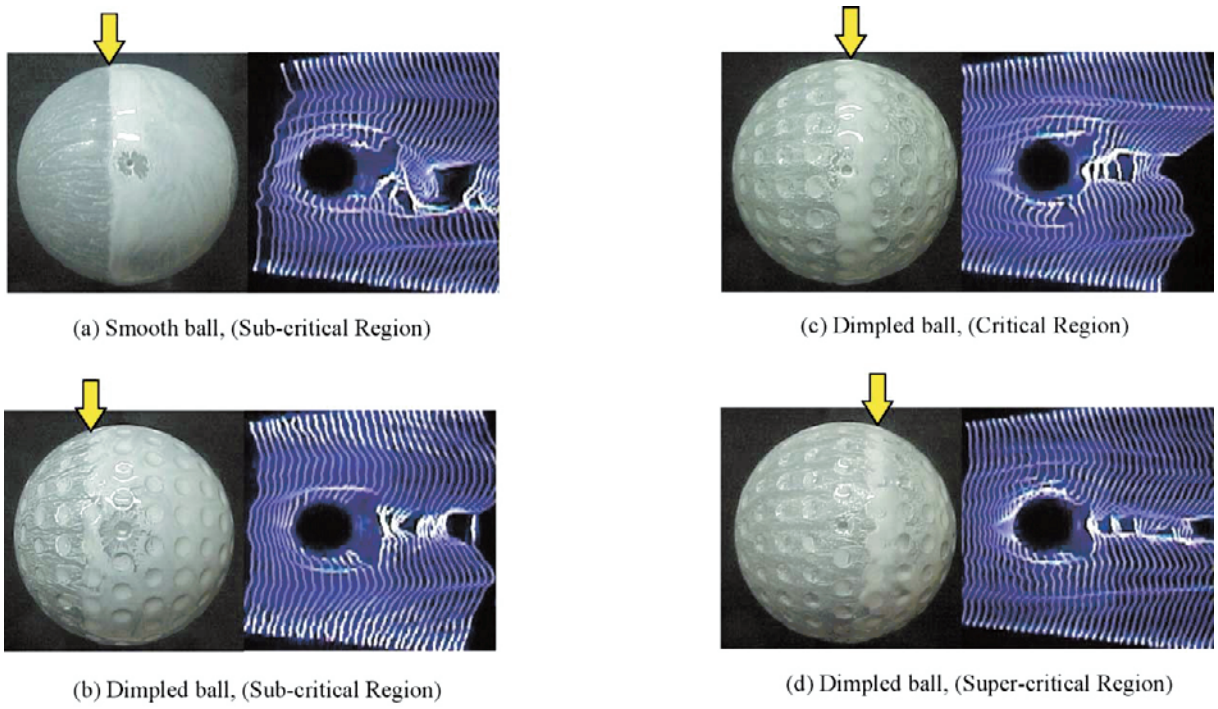

(a) Smooth ball, (Sub-critical Region)

(c) Dimpled ball, (Critical Region)

(b) Dimpled ball, (Sub-critical Region)

(d) Dimpled ball, (Super-critical Region)

Fig.1 Visualization around sphere (Oil Film Method, Spark Tracing Method)

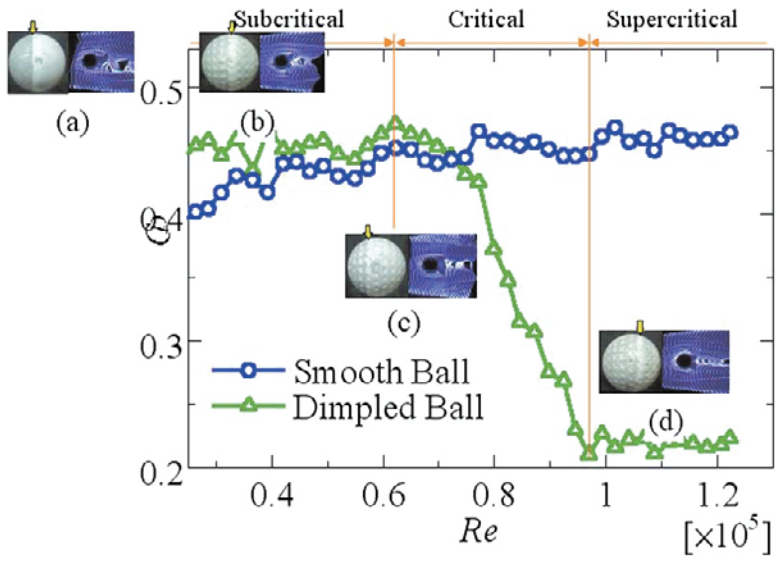

Fig.2 Changes of drag coefficient to the Reynoldes number

Fig.1 (a) shows the flow visualization around a smooth ball using the oil-film method and the spark tracing method. Fig.1 (b)-(d) show the same flow aroud a dimpled ball using the same visualization methods.

Fig. 2 shows the relation between CD and Re about a smooth ball and a dimpled ball together with the visualizaton results at each point. The flow critical point of the dimpled ball located at Re=1.0*105, but the same point of the smooth ball locates at Re=3.5*105. The flow separation point of dimpled ball moves to the down stream direction and the area of wake of it decreases compared with the flow around the smooth ball.