



**ENROUTE TO CONVECTION: BREAKUP OF CONDUCTION LAYER**  
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The sequence of photos illustrates the transition from a conductive to a convective mode of heat transfer. This is achieved by ramping the bottom plate temperature from 22°C to 38°C at 4°C/10 min; thus introducing varying temperature gradients in the fluid (Water/Glycerol;  $Pr \sim 1140$ ). Flow tomography, with liquid crystals as the dispersion agent, is used on a cubic cavity (Mukherjee et al., 1997). The progression of colors (red, green, and blue for two separate temperature ranges, 24–30°C and

31–36°C) captures the periodic process of: a conductive phase, break off and then mixing (Sparrow et al., 1970). An 85 mm. lens (aperture at  $f/4$  with a 1 sec. exposure time) is used to image (a) the generation of thermals and wall jets, (b) merging of two thermals, (c) mushrooming due to viscous and thermal resistance, (d) movement of thermals towards each other due to radial pressure gradient, and (e, f) emergence of several convective rolls.