

Module 8: Learning objectives

- In this chapter, the focus is on convection processes associated with the change in phase of a fluid, particularly those processes that can occur at a solid-liquid interface, namely, boiling and condensation.
- For these processes, the latent heat associated with the phase change is significant.
- Because there is phase change, heat transfer to and from the fluid can occur without influencing the fluid temperature. Hence, in boiling and condensation, large heat transfer rates may be achieved with small temperature differences.
- The heat transfer coefficient associated with boiling and condensation depends on several parameters, such as surface tension between liquid-vapour interface, latent heat, density difference between liquid and vapour, length scale, specific heat and viscosity.
- It is apparent that boiling and condensation are complicated processes for which the existence of generalized relations is somewhat limited. This chapter identifies the essential physical features of the processes and presents correlations suitable for the approximate engineering calculations. For more accurate calculations for a wider variety of problems, the reader should refer to graduate level textbooks on two-phase flow and boiling.