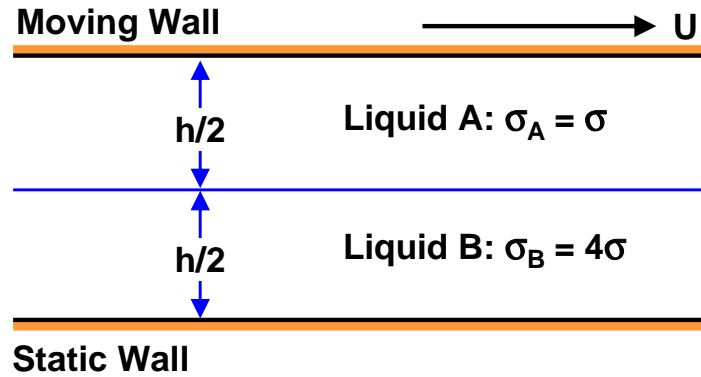


**Problem 150D**

Two immiscible viscous liquids are introduced into a Couette flow device so that they form two layers of equal height as follows:



The dynamic viscosity,  $\mu$ , of liquid A is one quarter of that of liquid B. The upper plate is then moved at a velocity,  $U$ . Find:

- (a) The velocity of the interface between the two liquids.
- (b) The “apparent viscosity” of the mixture as seen by an experimenter who believes that only one liquid is in the device.

Note: At the interface the two liquids must have the same velocity.