

### **simple shear**

An idealized treatment of a fluid between two large parallel plates (to permit ignoring edge effects) of area  $A$ , separated by a distance  $h$ . If one plate moves relative to the other with a constant velocity  $V$ , requiring a force  $F$  acting in the direction of movement, and the density, pressure, and *viscosity* throughout the fluid are constant, the Newtonian equation can be coupled with the equations of motion and of continuity to show that the velocity gradient in the fluid is constant ( $= V/h$ ), and that  $F/A = \eta V/h$ . This idealized case (simple shear) is sometimes used to define shear viscosity.

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