BC between immiscible fluids

- $\left[\rho(\mathbf{u}-\tilde{\mathbf{v}})\cdot\tilde{\mathbf{n}}\right]=0$
- $\left[\left\{\rho\mathbf{u}(\mathbf{u}-\tilde{\mathbf{v}})-\boldsymbol{\tau}\right\}\cdot\tilde{\mathbf{n}}\right]=\mathbf{t}^{\sigma}$
- $\left[\left\{\rho E(\mathbf{u}-\tilde{\mathbf{v}})-\mathbf{u}\cdot\boldsymbol{\tau}+\mathbf{q}\right\}\cdot\tilde{\mathbf{n}}\right]=\mathbf{t}^{\sigma}\cdot\tilde{\mathbf{v}}$

- $\mathbf{u}_I=\mathbf{u}_{II},\ \mathbf{T}_I=\mathbf{T}_{II}$
- $\mathbf{u}_I=\mathbf{u}_{II}=\tilde{\mathbf{v}}$
- $\left[\boldsymbol{\tau}\cdot\tilde{\mathbf{n}}\right]+\mathbf{t}^{\sigma}=\mathbf{0}$
- $\left[\mathbf{q}\cdot\tilde{\mathbf{n}}\right]=\mathbf{0}$

$$\Sigma(\mathbf{x},t)=0 \qquad \Rightarrow$$

$$\frac{d\Sigma}{dt}=\frac{\partial\Sigma}{\partial t}+\tilde{\mathbf{v}}\cdot\nabla\Sigma=0 \qquad \text{on} \quad \Sigma=0$$

$$\rho(\mathbf{u}-\tilde{\mathbf{v}})\cdot\frac{\nabla\Sigma}{\|\nabla\Sigma\|}=0$$

$$\frac{\partial\Sigma}{\partial t}+\mathbf{u}\cdot\nabla\Sigma=\frac{D\Sigma}{Dt}=0 \qquad \text{on} \quad \Sigma=0$$