

$$(1) \quad u^{\alpha} = u^{n-1} + \Delta t \text{ (Diffusion + advection)}$$

$$(2) \quad \text{Flux} \quad \text{fix} \quad u^{\alpha} \rightarrow \text{Eq 14 Vanella et al}$$

$$(3) \quad \begin{array}{l} \text{Multiphase} \rightarrow \nabla \cdot \left(\frac{1}{S} \nabla P^n \right) = f(u^{\alpha}) \\ \text{Singlephase} \rightarrow \nabla \cdot (\nabla P^n) = f(u^{\alpha}) \end{array} \quad (\text{Multigrid Poisson})$$

$$(4) \quad \begin{array}{l} \text{Flux fix} \quad \left(\frac{1}{S} \nabla P^n \right) \rightarrow \text{Eq 15 Vanella et al} \\ \text{Multiphase} \quad (\nabla P^n) \rightarrow \text{Singlephase} \end{array}$$

$$(5) \quad u^n = u^{\alpha} - \Delta t \frac{1}{S} \nabla P^n \quad \left[\begin{array}{l} \text{Solve this equation} \\ \text{using fluxes at the} \\ \text{boundary} \end{array} \right]$$