

Legend:  
**Functions**  
**Structures**  
**Substructs**  
**Subsubstruct**  
**Subsubsubstruct**  
**(Re-Defining as)**

# runBWcompSim

This is a detailed flow chart of  
 Gage R. and Justus B.  
 compositional flow simulator.

## BWinputData

- **function inputs:** none
- **function outputs:**
  - **G**
  - **rock**-perm, porosity, pore volume, transmissibility, G
  - **options**- covergence, trivial, RRiteration, and max outer loop tolerances
  - **thermo**- vp water, handle to PREOS, phase, fugacity switch, mixing rule
  - **influxfluid**-components, n, Zi, pressure, temp,call
  - **outfluxfluid**- components, n, Zi, pressure, temp,call
  - **initialfluid**-components, n, Zi, pressure, temp, call
  - **nonlinear**-max iterations, nonlinear, cellwise
  - **system**-R,temp,vp,fluid,Ncomp,compressibilty, p\_ref, mv of water, nonlinear, cellwise, dt, total time, steps, t
  - influx\_p, outflux\_p, influx\_rate



## setupBWcontrols

- **function inputs:**rock, outfluxFluid, influxFluid, influx\_rate, thermo, options, system
- **subfunction(s):**
  - **GI\_flash:**
    - **function inputs:****bc.dirichlet**.fluid,**thermo,options**
    - **function outputs:**success\_flag,stability\_flag,Xiv,Xil,Zgas\_vap, Zgas\_liq, vapor\_frac,cubic\_time
- **function outputs:**
  - **bc**
    - **dirichlet**-faces,pressure,fluid(this gets re-defined),Xif,Xio,SoSg,Sw,V,Zi,Eo,Eg,F,Ew
    - **in**-influx\_cells,fluid,pressure,Zi,Eg,Eo,C\_influx (per component),T\_influx,water\_influx



## setupBWsystem (not finished)

- **function inputs:**
  - **rock:**
    - **G:**
      - **cells:****faces(cf),num(nc)**
      - **faces:****num**
    - **T (T)**
  - **bc**
- **subfunction(s):**
  - **BWdivOp**
    - **function inputs:**
    - **function outputs:**
  - **BWgrad**
    - **function inputs:**
    - **function outputs:**
  - **BWfaceConcentrations**
    - **function inputs:**
    - **function outputs:**
- **function outputs:** **ops**





#### **initBWstate**

- **function inputs:** rock, system, pressure, options, thermo
- **function outputs:** state0

#### **BWsolveFI**

- **function inputs:** timestep, system, ops, thermo, rock, state0, bc, equation, options
- **function outputs:** state, convergence