

Errata in :

Brochard, L., & Honório, T. (2020). Revisiting thermo-poro-mechanics under adsorption: Formulation without assuming Gibbs-Duhem equation. *International Journal of Engineering Science*, 152, 103296.

Equations (3) and (A.2) should be

$$\begin{cases} dP_c = -\frac{K_c^V}{V_c} dV_c + \frac{K_c^N}{N_c} dN_c + K_c^V \alpha_c^u dT \\ d\mu = -\frac{K_c^N}{N_c} dV_c + \frac{(K_c^N)^2}{K_c^V - K_c^d} \frac{V_c}{N_c^2} dN_c - \left( \frac{S_b}{N_b} + \frac{K_c^N}{K_c^V - K_c^d} \frac{V_c}{N_c} (K_c^d \alpha_c^d - K_c^V \alpha_c^u) \right) dT \\ dS_c = K_c^V \alpha_c^u dV_c + \left( \frac{S_b}{N_b} + \frac{K_c^N}{K_c^V - K_c^d} \frac{V_c}{N_c} (K_c^d \alpha_c^d - K_c^V \alpha_c^u) \right) dN_c + \frac{V_c c_c^v}{T} dT \end{cases}$$

instead of

$$\begin{cases} dP_c = -\frac{K_c^V}{V_c} dV_c + \frac{K_c^N}{N_c} dN_c + K_c^V \alpha_c^u dT \\ d\mu = -\frac{K_c^N}{N_c} dV_c + \frac{(K_c^N)^2}{K_c^N - K_c^d} \frac{V_c}{N_c^2} dN_c - \left( \frac{S_b}{N_b} + \frac{K_c^N}{K_c^N - K_c^d} \frac{V_c}{N_c} (K_c^d \alpha_c^d - K_c^V \alpha_c^u) \right) dT \\ dS_c = K_c^V \alpha_c^u dV_c + \left( \frac{S_b}{N_b} + \frac{K_c^N}{K_c^N - K_c^d} \frac{V_c}{N_c} (K_c^d \alpha_c^d - K_c^V \alpha_c^u) \right) dN_c + \frac{V_c c_c^v}{T} dT \end{cases}$$

The correct definitions of the coefficients  $\gamma$  and  $\alpha_c^{eff}$  (before equation 4) are  $\gamma = \frac{K_c^V - K_c^d}{K_c^N}$  and  $\alpha_c^{eff} = \frac{\delta}{\gamma} \alpha_c^u - \frac{\delta - \gamma}{\gamma} \alpha_c^d$  instead of  $\gamma = 1 - \frac{K_c^d}{K_c^N}$  and  $\alpha_c^{eff} = \frac{\delta}{\gamma} \alpha_c^u - \frac{1 - \gamma}{\gamma} \alpha_c^d$ .

In the remaining of the paper, all instances of  $\alpha_c^d$  must be replaced by  $\frac{\delta - \gamma}{1 - \gamma} \alpha_c^d$  (or equivalently  $\frac{1 - \gamma}{\delta - \gamma} \alpha_c^d$  replaced by  $\alpha_c^d$ ). This change has no impact on the discussion and on the conclusion of the paper.

For the microporous medium  $\alpha_c^d$  appears in the expression of  $\alpha^{eff}$ ,  $\alpha_\phi^{eff}$ ,  $\alpha_\mu^{eff}$  and  $c^{eff}$  (drained thermal expansion, pore thermal expansion, undrained thermo-chemical coupling coefficient, and drained heat capacity). For the double porosity medium with macro- and micro-porosities,  $\alpha_c^d$  appears in the expression of  $\tilde{\alpha}^{eff}$ ,  $\tilde{\alpha}_\phi^{eff}$ ,  $\tilde{\alpha}'_\mu^{eff}$ ,  $\tilde{\alpha}''_\mu^{eff}$ ,  $\tilde{c}^{eff}$  (drained thermal expansion, pore thermal expansion, undrained thermo-chemical coupling coefficient, undrained thermal expansion, and drained heat capacity). All the correct expressions are listed hereafter (note also that there was a typo in the last term of  $\alpha_\mu^{eff}$  and  $\tilde{\alpha}'_\mu^{eff}$ ) :

$$\begin{aligned} K^{eff} \alpha^{eff} &= K^{eff} \alpha_s + M^d b \phi (\alpha_c^d - \alpha) \\ \alpha_\phi^{eff} &= \alpha_s (b^{eff} - \delta \beta \phi^{eff}) + \phi^{eff} (\delta \alpha_c^u - \delta (1 - \beta) \alpha_c^d - \alpha_b) \\ \alpha_\mu^{eff} &= \alpha_{\rho\phi}^{eff} + \delta (1 - \beta) \frac{\phi \rho_c}{\rho_b} (\alpha_c^u - \alpha_c^d) - \frac{S_b}{M^{eff}} \\ \frac{c^{eff}}{T} &= \frac{c + \phi c_c^v - \phi^{eff} c_b^v}{T} + \phi \delta K_c (\alpha_c^u)^2 - \phi^{eff} K_b (\alpha_b)^2 + \frac{\delta - \gamma}{\gamma} \phi \delta K_c (\alpha_c^u - \alpha_c^d)^2 - M^d (\alpha_\phi + \phi \alpha_c^d)^2 \\ \tilde{K}^{eff} \tilde{\alpha}^{eff} &= \tilde{K}^{eff} \alpha + \tilde{M}^d b_c \phi_c (\alpha_c^d - \alpha) \\ \tilde{\alpha}_\phi^{eff} &= \alpha_s \left( \tilde{b}^{eff} - (\phi_b + \delta \tilde{\beta} \phi_c^{eff}) \right) + \phi_c^{eff} \left( \delta \alpha_c^u - \alpha_b + \delta (1 - \tilde{\beta}) \alpha_c^d \right) \\ \tilde{\alpha}'_\mu^{eff} &= \tilde{\alpha}_{\rho\phi}^{eff} + \delta (1 - \tilde{\beta}) \phi_c^{eff} (\alpha_c^u - \alpha_c^d) - \frac{S_b}{\tilde{M}^{eff}} \\ \tilde{K}'_u{}^{eff} \tilde{\alpha}'_u{}^{eff} &= \tilde{K}^{eff} \tilde{\alpha}^{eff} + \tilde{M}^{eff} \tilde{b}^{eff} \left( \tilde{\alpha}_{\rho\phi}^{eff} + \delta (1 - \tilde{\beta}) \phi_c^{eff} (\alpha_c^u - \alpha_c^d) \right) \\ \frac{\tilde{c}^{eff}}{T} &= \frac{c + \phi_c c_c^v - \phi_c^{eff} c_b^v}{T} + \phi_c \delta K_c (\alpha_c^u)^2 - \phi_c^{eff} K_b (\alpha_b)^2 + \frac{\delta - \gamma}{\gamma} \phi_c \delta K_c (\alpha_c^u - \alpha_c^d)^2 - \tilde{M}^d (\alpha_{\phi_c} + \phi_c \alpha_c^d)^2 \end{aligned}$$

$\alpha_c^d$  also appears in equations (20), (21) and (22) in the discussion. The correct expressions are:

$$\left\{ \frac{\partial \epsilon}{\partial T} \Big|_{\sigma, P_b} = \alpha_s + \frac{M^d b \phi}{K + M^d b^2} (\alpha_c^d - \alpha_s) \text{ (ext. poromech. without G-D)} \right. \quad (20)$$

$$\left. \left\{ \frac{\partial P_b}{\partial T} \Big|_{\sigma, \phi, \rho_c} = \frac{\rho_b}{\delta \rho_c} \frac{K M^{eff}}{K_u^{eff}} \phi (\alpha_c^u - \alpha) + \frac{\rho_b}{\rho_c} \frac{\delta - \gamma}{\gamma} K_c (\alpha_c^u - \alpha_c^d) \text{ (ext. poromech. without G-D)} \right. \right. \quad (21) \text{ and } (22)$$