

- The correlation between  $\text{Log } r_{\text{qmw}}$  from TVIS vial and the thermocouple temperature in a neighboring vial of the re-heating part of annealing step (Fig.2A) provides a predictive product temperature at primary drying process defined as T-FPEAK (Fig.2B).
- The decrease in  $Q_{\text{pr}} = T_j - T_d - 1.853 \cdot 10^{-4} \cdot (T_j - T_d)^2 - 3.50 \cdot 10^{-6} \cdot (T_j - T_d)^3$

