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Assessment of the Flory diluent theory to evaluate its applicability in the determination of the amorphous-amorphous interaction energy¹ RUSHIKESH MATKAR, THEIN KYU, University of Akron — In the derivation of the Flory diluent theory, Flory has removed two of three assumptions inherent in Prigogine's model to determine the solubility of solids using regular solution theory, but the third assumption that solvent is completely immiscible in the crystal. An analytical expression for the calculation of the liquidus line is a consequence of the third assumption. Various researchers have also applied this theory to determine χ_{FH} representing the amorphous-amorphous interaction energy. We contest this methodology in light of the reported discrepancies in the determination of χ_{FH} in comparison with other test methods. We have removed the third assumption and established the thermodynamics of binary crystalline mixtures by the incorporation of crystal-solvent interaction effects. We identify the source of the discrepancies in this framework and recommend that all literature regarding the present topic should be treated with circumspect.

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