

### *Influence of Stoichiometry on the Energetics of a Two-Component Crystal System*

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Multicomponent crystals have been attracting significant interest in recent years, as they may be used to improve the properties of crystalline products (e.g., the solubility of active pharmaceutical ingredients). During the development of this type of materials, it is very important to assess their stability relative to the pure solid components. Although various studies addressing this problem can be found in the literature,<sup>1,2</sup> there are still some very little explored fundamental questions. For example, the influence of stoichiometry on the stability of these materials?

In this work, the energetics of two-component salts of 1:1 and 1:2 (Fig.1) stoichiometries, consisting of maleic acid (MA) and L-phenylalanine (PHE), was investigated, based on solution calorimetry measurements. The obtained results indicated that the difference in lattice enthalpy between the MA:PHE<sub>2</sub> and MA:PHE structures is approximately additive, as it corresponds to the lattice enthalpy of L-phenylalanine.

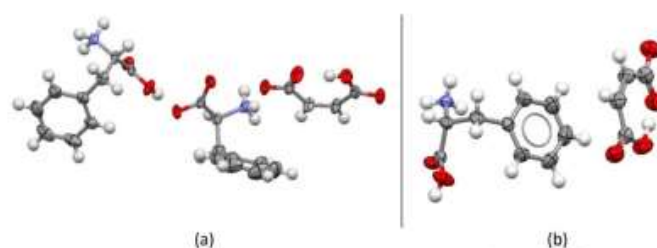


Fig. 1- Comparison between the molecular structure of the salts (a) MA:PHE<sub>2</sub><sup>3</sup> and (b) MA:PHE (CCD reference, EDAXIQ).

#### References:

<sup>1</sup> A.O.L. Évora, *et al.*; *Cryst. Growth Des.* **2019**, *19*, 5054–5064.

<sup>2</sup> G.L. Perlovich; *Cryst. Growth Des.* **2020**, *20*, 5526–5537

<sup>3</sup> M.F.M. Piedade and Daniela Silva unpublished results.

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