

TPD-MS method for assessing the degree of dispersion of calcium carbonate particles in composites of the “Calcium Carbonate : Organic Matrix”

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This paper presents the results of studying the composites "CaCO₃ - protein" by the method of temperature-programmed desorption (TPD-MS) [1]. It has been proven experimentally that the location of the carbon dioxide (CO₂) release peak during the thermal destruction of CaCO₃ depends on the isoelectric point (pI) of the protein that is part of the composite. For example, the peak of CO₂ release from the “CaCO₃ - immunoglobulin G (pI 6.4)” composite is located in the 640-650 °C region, and a similar CO₂ peak of the composite “CaCO₃ -cytochrome C (pI 10.7)” is in the 540-550 °C region (Fig.). This is due to both the size of the CaCO₃ particles and their location in the composite.

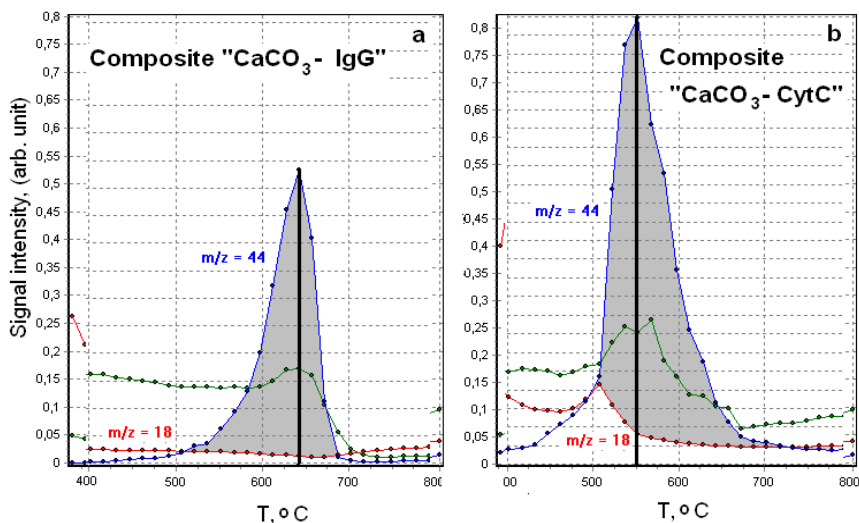


Fig. Thermogram of CO₂ release ($m/z = 44$) by thermal decomposition of sample “CaCO₃ – Immunoglobulin G“ (a) and “CaCO₃ – Cytochrome C“ (b) composites

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