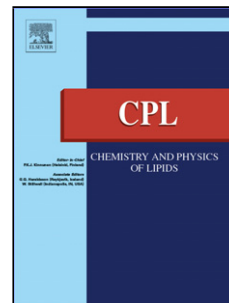


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On the Quantitative Phase Analysis and Amorphous Content of Triacylglycerols Materials by X-ray Rietveld Method

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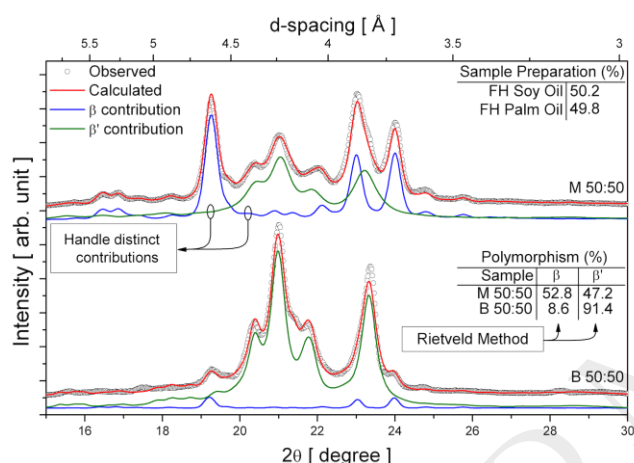
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Graphical Abstract



Graphical Abstract. Mixtures (M) and blended (B) hardfats samples involving fully hydrogenated of soybean (FHSO) and palm (FHPO) oils were characterized by XRD associated with the Rietveld structure refinement method, aiming a quantitative analysis of TAG polymorphs. The M50:50 sample was prepared to 50% of FHSO (β -form) and 50% of FHPO (β' -form). Quantitative Phase Analysis (QPA) based on Rietveld Method applied to this sample provided the expected value for them, validating the applicability of this approach in this kind of materials. After thermal treatment and melting, the QPA of the blended B50:50 sample has shown a distinct concentration of the β and β' polymorphic forms, with the predominance of the β' -form due to the seeding process

Highlights:

- Rietveld Method supports XRD quantitative phase analysis of polymorphism on industrial and academic appealing samples;
- Rietveld analysis of modified β -SSS and β' -PPS structures to allow β and β' polymorphs content from TAG materials;
- Assessment of amorphous/crystalline cocoa butter content based on XRD pattern by Rietveld Method;
- This approach allows for improvement on the TAG polymorphic characterization compared to labeling peak intensities;

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