

Title Through the looking-glass: Tomographic techniques for inspecting the secret inner life of fruit

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Abstract

In this presentation we will give an overview of tomographic techniques to inspect internal quality features of fruit. Such techniques are nondestructive and provide 3-D images of the fruit at various spatial resolution levels. The focus will be on X-ray computed tomography (CT), magnetic resonance imaging (MRI), optical coherence tomography (OCT) and neutron tomography (NT). The techniques differ widely in terms of achievable resolution and accessibility and provide complementary information about the fruit. We will first review the basic principles of the different tomographic techniques. We will then show how tomography can be used for investigating the time course of the development of postharvest disorders in fruit. Further, we will explore the challenges and prospects of online tomography for fruit grading purpose. Tomographic techniques can also be used to obtain information about the 3-D microstructure of the fruit which is believed to affect quality attributes such as texture. We will give an example how such microstructural information can be incorporated in multiscale simulation models to predict the cellular gas concentrations in fruit. Such models may aid towards a better understanding of controlled atmosphere storage of pome fruit.