Use of mid infrared spectroscopy to analyze the ripening of Brazilian bananas

C. A. Nascimento [a], L. C. Luiz[a], M. J. V. Bell[b], R. T. Batista[a], S. Meriva[b] e V. Anjos[b]

a) Universidade Federal de Juiz de Fora, Departamento de Física

Abstract

Banana is one of the most consumed fruits in the world due to its flavor and nutritional value. The knowledge of the ripening stage of bananas is essential for its commercialization, since, after harvesting it can take days in transportation until reaching their destination. The use of spectroscopic techniques in the infrared region has been widely used in the food industry. In this study, a nondestructive analytical method was developed to monitor the maturation of silver bananas, dwarf bananas, gold bananas and bread bananas using Fourier Transform MidInfrared spectroscopy. To accompany the ripening of the bananas, 3 regions in each banana were chosen (bottom, middle and top) and from these, 3 measures were taken around the banana perimeter. Beyond the ripening process of the bananas, functional groups are identified as well as the beginning of the stage previous to the mature fruit, characterized by the emission of ethylene and CO2. Principal components analysis allowed the identification of the process irrespective of the banana type which suggests the automation possibility of the process. The authors greatly acknowledge the financial support of Brazilian funding agencies CNPq, CAPES and FAPEMIG .

e-mail: lili.aline21@gmail.com