Investigation of Guava ripeness using a low-cost electronic nose, developed with nanofilm of conductive polymers.

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Determining the degree of fruits ripeness is very important, since the physiologically immature fruits have not completed their growth, while fruit harvested at more advanced stage are more susceptible to disease and spoil more quickly. In order to minimize these losses in production a strategy involving electronic nose to monitor volatile organic compounds (VOCs) emitted during ripening have been developed. In this study was evaluating the volatile emission during the guava ripening using low-cost electronic nose. Sensors were developed using “Line Patterning” technique on the vellum paper substrate and coated with nanofilm of polyaniline. Guava (\textit{Psidium guajava}) was purchased in the local market and the VOCs were monitored for 6 days of ripening using a low-cost electronic nose. The morphology of the polymer film deposited on the sensor was characterized by the scanning electron microscopy (SEM). It was observed that the sensors were able to detect volatiles during ripening guava, presenting a higher voltage signal at the end of maturation, thus indicating a greater release of VOCs of the final stages of fruit ripening. Also found that the electronic system remained stable during the ripeness measurements and the temperature inside the chamber containing the fruits remained constant (20°C). It was observed that polyaniline onto the sensor surface, are showing aggregates, and the uniform film makes the gas sensor extremely sensitive to VOCs. The response of these disposable sensors, for monitoring the degree of guava ripeness, indicates the potential application of a low cost electronic nose to fruit harvest and post-harvest.