

applications in food and pharmaceutical industries) were finally identified and quantified by high-performance liquid chromatography (HPLC).

**PP-193 Design and Implementation of Voice Security System using
Matlab and Java**

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This research focuses on the design and implementation of voice security system using Matlab and Java by exploiting two mainly techniques, i.e. scrambling and encrypting. The objective of this research is to secure and ensure confidentiality of the transmitted voice signal. Three algorithms will be implemented including scrambler algorithm, naïve algorithm and the proposed selective bits encryption algorithm. The security standard that will be used to simplify and accomplish the project is Advanced Encryption Standard (AES). The effectiveness of our proposed algorithm is evaluated based on the mean opinion score (subjective score), mean squared error (objective) and computing time. The results showed that our proposed selective bits encryption algorithm outperformed other algorithms.

PP-195 VircoSpray – Sprayable Virgin Coconut cooking oil

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VircoSpray is a blended cooking spray between virgin coconut oil and palm olein. It is designed to cater the needs of specific groups such as travelers and adventurers, army staff and diet conscious groups. For travelers and adventures, the VircoSpray can be used for instant cooking, frying and roasting during camping, fishing and picnicking. For army, the spray can be included in the ration due to its lightness and simplicity. The VircoSpray also offers a great benefit to diet conscious groups because the amount of calories can be controlled during cooking and frying. Finally, the making of burger, omelette, pancake, satay, 'roti canai', barbecue and microwave products are more convenient using VircoSpray.

PP-196 Modification of CVD reactor for carbon nanomaterials production

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Chemical vapour deposition (CVD) reactor is one of the processes commonly used for carbon nanomaterial (CNM) production. This method is economical and provides high yield of good quality CNM. However, improvement of the CVD reactor system was necessary due to its long time requirement to complete each batch of production. A two-stage CVD was designed, locally fabricated and modified to overcome the limitations. Improvements included multistage system, which can be used to perform different processes such as floating catalyst reaction, fixed catalyst process, calcination, reduction and oxidation processes. A cooling system was added to reduce the production time. The system was further modified to increase the adsorption capacity of the products. The time requirement for one batch of run was reduced from 8 hours to 3 hours by improving the system.