Compression test was carried out to analyze the compressive force or crush resistance of a material. The ability of the material to recover after applying a specified compressive force over a defined period of time is measured and the strain vs stress curves of the samples were compared. According to the graphs, the sample NR-2.5M-5 / IDA 2.5M-1-2.5 has shown the highest stress resistant value of 12,900,000 Nm^{-2}.

Oil absorption properties of these DN polymers were analyzed extensively in diesel, coconut oil and discard oil. The oil absorption properties of DNs were mainly depending on the chemical architecture of the macromolecular matrices. The prepared DNs have shown much higher oil absorption in diesel and coconut oil. The highest oil absorbency (diesel, coconut oil or discard oil) was shown by the DN sample NR-2.5M-30-5/ IDA 2.5M-0.1-2.5. Results conclude that the efficient absorbency for the entrapment of these oils is DN networks over SN networks.

Considering all the results, it could be concluded that the developed DN systems have better mechanical properties as well as the oil absorbtive properties than conventionally SN samples.

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Technical Sessions : A - 26

Development of a pH sensitive indicator from *Terminalia catappa* leaves

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A pH indicator is a chemical compound used to visually determine the acidity or basicity of a solution. Extracts of both red and green leaves from Terminalia catappa were investigated to develop a natural pH sensitive indicator.

A 1 mol dm^{-3} stock solution of HCl was diluted to prepare a series of solutions from pH 0 to 6. To prepare the pH series from pH 8 to 14, a 1 mol dm-3 stock solution of NaOH was diluted accordingly. The pH 7 solution was prepared with deionized water and adjusting its pH with NaOH and/or HCl. Leaves of Terminalia catappa were washed well with water, wiped clean and dried in air. The leaves were then deveined and cut into small pieces. 20 g of these leaves were placed in a mortar along with a small volume of methanol and crushed. The crushed leaves were transferred to a large beaker and more methanol was added so that the total volume of methanol was 80 ml. The beaker was covered with a watch glass and left for 1 hour. The resulting solution was filtered, stored in a glass container and 25 times and 50 times diluted solutions of the extract in methanol were prepared. Portions of 2.00 mL from each pH solution were pipetted into a set of labeled test tubes and 0.20 mL of the leaf extract was added to each tube. The same procedure was adapted to two other sets of labelled test tubes using the 25 times and 50 times diluted extract. The green leaf extract showed a colour change only in the pH range 12-14. Therefore, only the red leaf extract was used for further investigations. A wavelength scan from 200-800 nm was performed on each mixture using Hitachi U-2910 Spectrophotometer.

The methanol extract of red leaves produced the colour changes shown in Figure 1 when added to solutions of different pH.

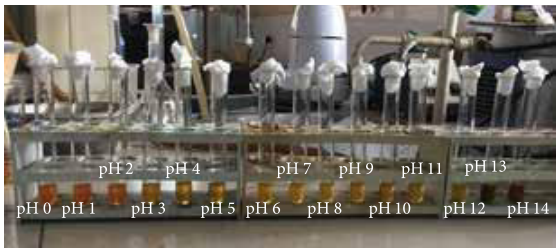

Figure 1: Change in colour of the methanolic extract of red *catappa* leaves with pH

Isosbestic point is a wavelength at which the absorbance of a solution containing two chemical species remains constant as the equilibrium between them changes. The wavelength/s at which the spectra of two or more species cross each other are taken as the isosbestic point/s.1 In the above plots, the observed isosbestic points could be attributed to colour changes in the pH series.
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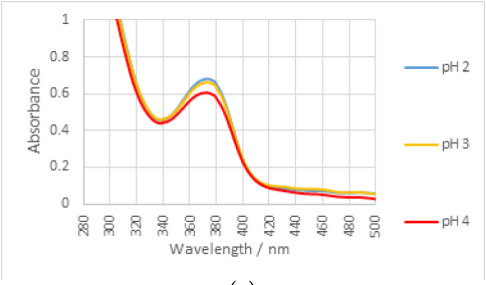
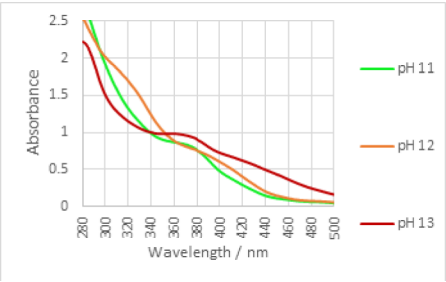


(a)



(b)

Figure 2: UV-Visible spectra of the red catappa leaf extract (a) pH 2 – 4, (b) pH 11 - 13

The methanolic extract of Terminalia catappa red leaves possesses pH sensitivity, and shows colour changes from red orange to yellow when the pH changes from 2 to 3, and from green yellow to purple when the pH changes from 12 to 13. It can be used to develop a natural pH indicator which is environment friendly and less toxic compared to synthetic indicators.

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Technical Sessions : A - 27

The inhibition of acetylcholinesterase *via* synthetically viable coumarin derivatives

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Acetylcholinesterase is a serine hydrolase responsible for the hydrolysis of acetylcholine. The reversible inhibition of acetylcholinesterase can be useful in combating Alzheimer's disease (AD). A computational study of the inhibition of acetylcholinesterase was conducted by performing Molecular Docking using a series of coumarin analogs generated by fragment based drug design methods.

The crystal structure with the PDB ID 1GQR was chosen as the receptor for docking studies. The synthetic coumarin analogs were each subjected to an energy minimization via the Spartan version 14 program, the level of theory being B3LYP /6-31G**. The drugs, rivastigmine and tacrine were used as reference molecules for identifying potential drug candidates by comparing the docking score and the interactions of the ligand with the active site. These two reference molecules were docked using Autodock Vina. The binding affinities are given in Table 1.

Table 1. Binding Affinities

Ligand	Binding Affinity(kJ/mol)
C_15	-11
C_06	-11
C_10	-10.5
C_05	-10
C_01	-9.9
C_13	-9.7
C_11	-9.6
C_14	-9.5
C_09	-9.4
C_07	-9.1
Tacrine	-8.9
C_02	-8.8
C_16	-8.7
C_12	-8.5
C_04	-8.4
C_08	-8.4
C_03	-8.2
Rivastigmine	-7.9
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