MESTECH Research Project

Project Title:

Characterisation and determination of rosin fingerprints using analytical approaches

Project Researcher:

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Funding Body:

IRCSET enterprise scheme/Henkel

Project Summary:

Rosins are natural compounds derived from pine tree resin. They are used widely in industry in paints and varnishes, drug coating and as flux in soldering. Rosins are composed of 90% acidic compounds and 10% neutrals. The acidic compounds are primarily abietic acid, neoabietic acid, dehydroabietic acid palustric acid and pimaric acid. The neutral compounds compose mainly of aldehydes and terpines. The acidic composition of rosins has been reported widely since the early 90's through the analysis of their methyl esters by GC-MS. However, the neutral compounds of rosins including aldehydes and terpenes have not been thoroughly investigated. An issue associated with the use of rosins in industry is their tendency to randomly crystallise. The component responsible for this crystallisation has not been fully identified. In this project rosin samples are analysed using Capillary Electrophoresis (CE) and High Performance Liquid Chromatography (HPLC) to identify the acidic and neutral components of the natural rosin materials. This work involves the method development using capillary electrophoresis and cyclodextrin modified buffers to achieve the best separation of the wide range of compounds present in this complex matrix. Once identified, each compound can then undergo viscosity studies in order to identify whether or not they have a significant effect on the viscosity of the rosin. Links between this viscosity and the rosins tendency to crystallise will be investigated. If identified, the possibility of removing or reducing the compound responsible for rosin crystallisation could be explored in order to eliminate this inhibiting problem.

Key Outputs:

- Monthly reports to Henkel
- Published peer reviewed academic papers