

A Step-by-Step Analytical Protocol For Detecting and Identifying Minor Differences In Like Materials and Polymers Using Pyrolysis -Gas Chromatography/Mass Spectrometry Technique

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Abstract : Detecting and identifying differences in like polymer materials are key factors in failure and deformation analysis, and reverse engineering. Pyrolysis-GC/MS is an easy solid sample introduction technique which expands the application areas of gas chromatography and mass spectrometry. The Micro furnace pyrolyzer is directly interfaced with the GC injector preventing any potential of cold spot, carryover, and cross contamination. In this presentation, the analysis of the differences in three polystyrene samples is demonstrated. Although the three samples look very similar by Evolve gas analysis (EGA) and Flash pyrolysis, there are indications of small levels of other materials. By performing Thermal desorption-GC/MS, the additive compounds between samples show the differences. EGA, flash pyrolysis, and thermal desorption analysis are the different modes of operations of the micro-furnace pyrolyzer enabling users to perform multiple analytical techniques.

Keywords : Gas chromatography/Mass spectrometry, pyrolysis, pyrolyzer, thermal desorption-GC/MS

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