

**New Polytriazoleimides containing green synthesized titanium dioxide using
Artemisia pallens plant extract: optical, dielectric, thermal and mechanical properties**

Balasubramanian R*, Fathima Rigana M, Balaji S, Selvamani A and Sarojadevi M

Department of Chemistry, Anna University, Chennai-600025, India.

Characterization of *Artemisia pallens* extracts

The GC-MS chromatogram of the *Artemisia pallens* water extract shown in fig 1a. It showed 7 prominent peaks with very narrow retention time. The fragmentation patterns for some of the peaks were comparable with the standard compounds and data is shown in Table 1. The GC-MS analysis revealed that the derivative of the compound 5-hepten-3-one was predominantly present in the water based extract with the retention time of 17.12 min. This compound shows a molecular ion peak at 236 and a base peak at 111, Fig 1(b). The second largest compound extracted out with the retention time of 6.644 min was found to be 5, 5-Dimethyl- 2 (5H) - Furanone. This derivative shows a molecular ion peak at 112 and a base peak at 97.05, Fig 1(c). The third major derivative was eluted at 2.406 min was found to be 2-pentanol. This compound has a molecular ion peak at 73 and a base peak at 45.0 Fig 1(d). It was expected that the above major compounds along with the other derivatives present in the water-based extract from the plant material are responsible for the formation of nano TiO₂ through hydrolysis and condensation reactions.

Table 1

GCMS peak report.

Peak	R.Time	Area	Area%	Height	Height%	A/H	Name
1	2.406	58191	4.59	34623	6.03	1.68	2-Pentanol
2	6.644	216359	17.07	65116	11.34	3.32	2(5H)-Furanone,
3	8.250	42213	3.33	23240	4.05	1.82	2(3H)-Furanone,
4	11.452	31477	2.48	21733	3.79	1.45	Ethanone,
5	17.120	771165	60.84	360771	62.84	2.14	5-Hepten-3-one,
6	18.633	79423	6.27	30677	5.34	2.59	2-(1-Hydroxy ethyl)-5-methyl-5-vinyl- tetrahydrofuran
7	18.855	35064	2.77	21124	3.68	1.68	4-Hepten-3-one

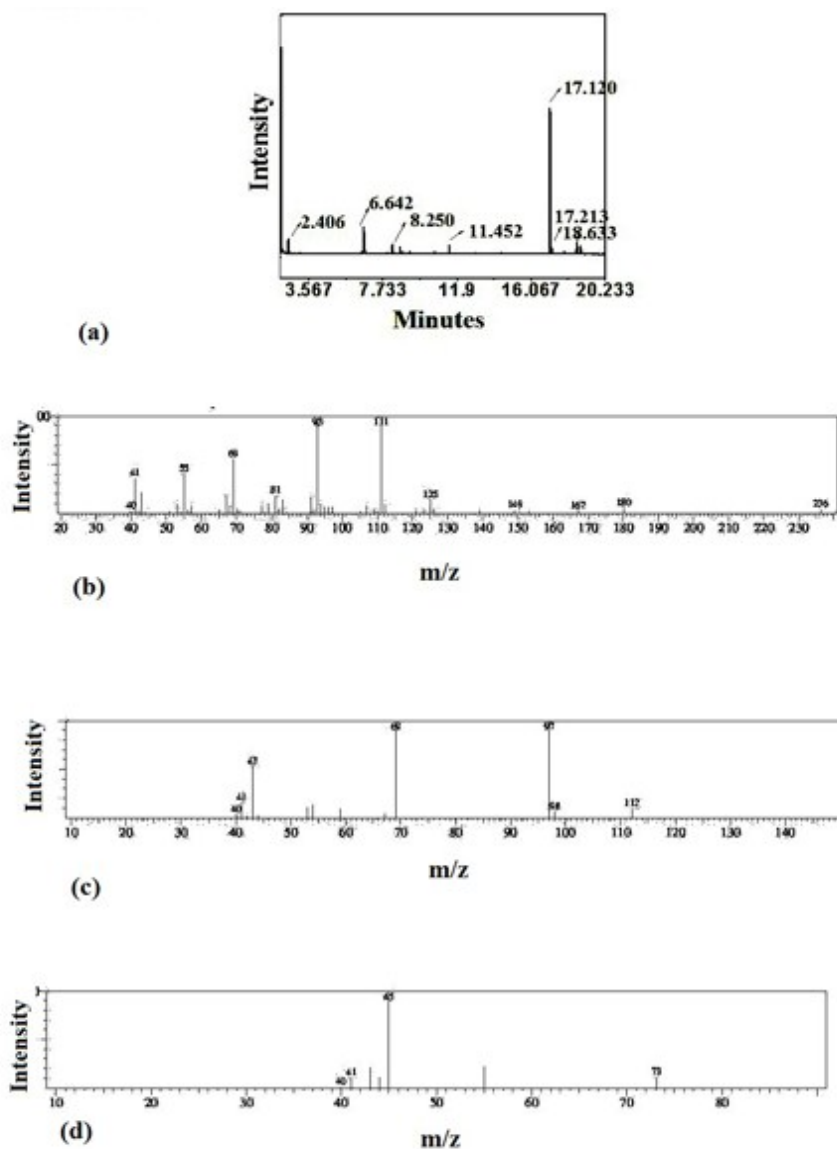


Figure 1. (a) GCMS of *Artemisia Pallens* plant extract, (b) Mass spectra of compound at retention time 17.12 min, and a base peak at 111, (c) Mass spectra of compound at retention time of 6.644 min, and a base peak at 97.05 (d) Mass spectra of compound at retention time of 2.406 min , and base peak at 45.0.