Electronic Supplementary Material (ESI) for Photochemical & Photobiological Science

Supplementary Information

Reductive Degradation of Perfluoroalkyl Compounds with Aquated Electrons Generated from Iodide Photolysis at 254 nm

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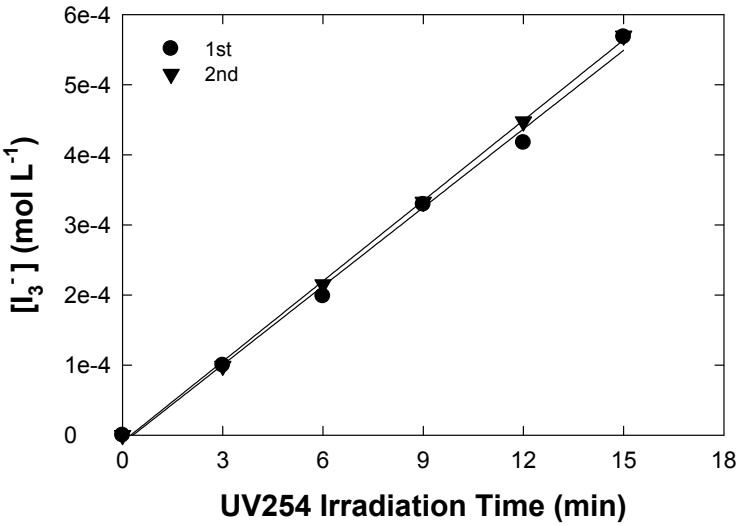


Fig. S1. Chemical actinometry determined for UV 254 nm using aqueous iodide and iodate. Incident Photon Number = 5.17(±0.06)×10^{-5} mol/L/min. The intrinsic quantum yield (73%) was reflected.

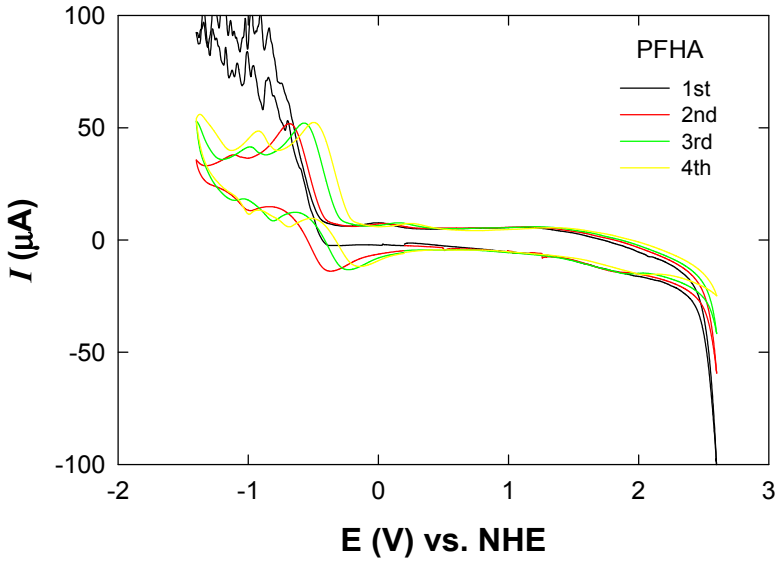


Fig. S2. Cyclic voltammograms of PFHA.

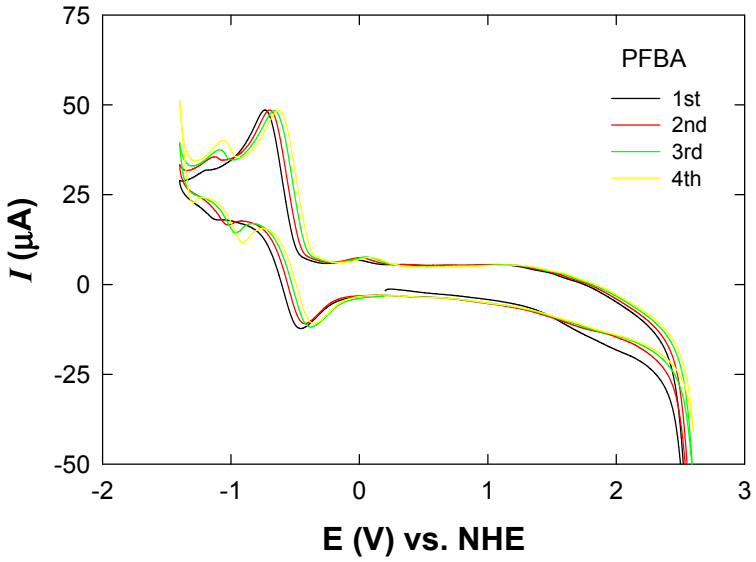


Fig. S3. Cyclic voltammograms of PFBA.

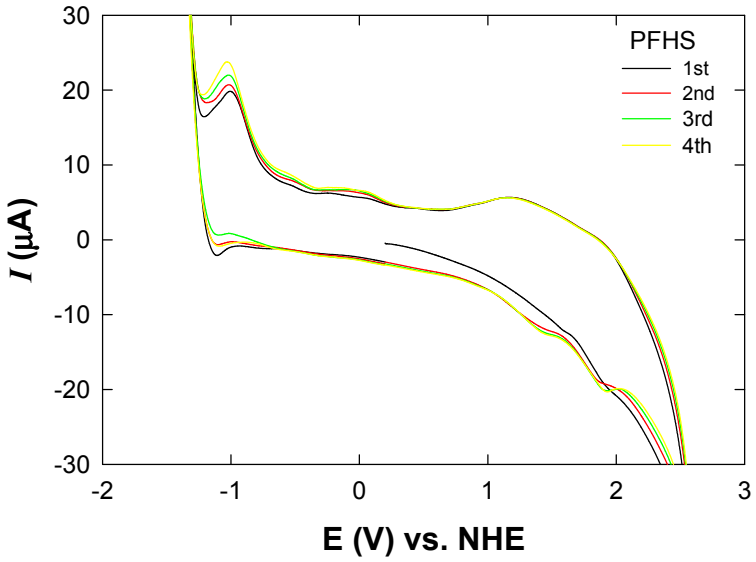


Fig. S4. Cyclic voltammograms of PFHS.

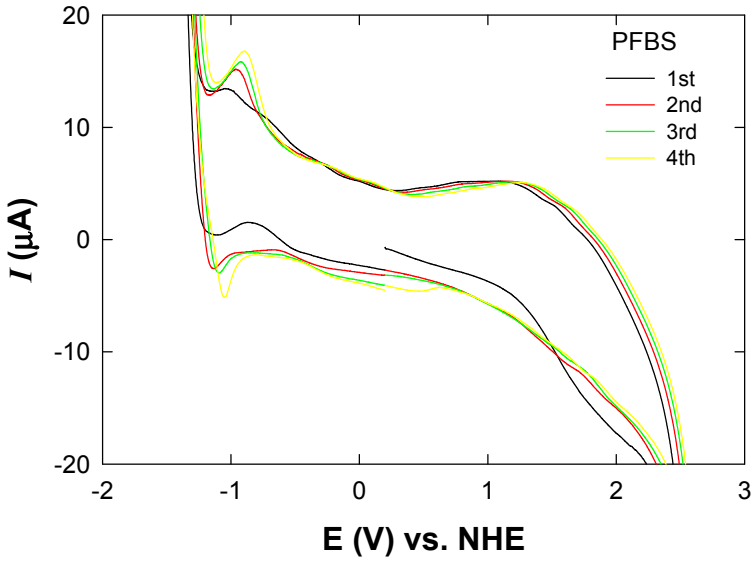


Fig. S5. Cyclic voltammograms of PFBS.

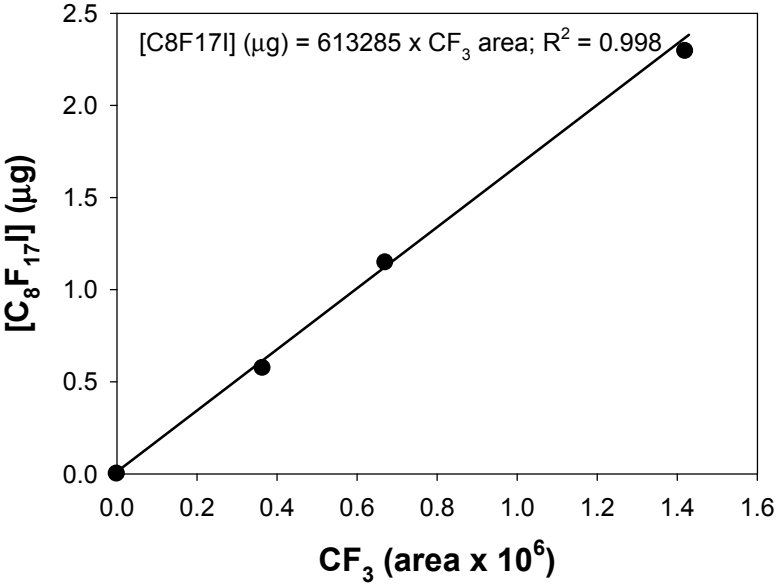
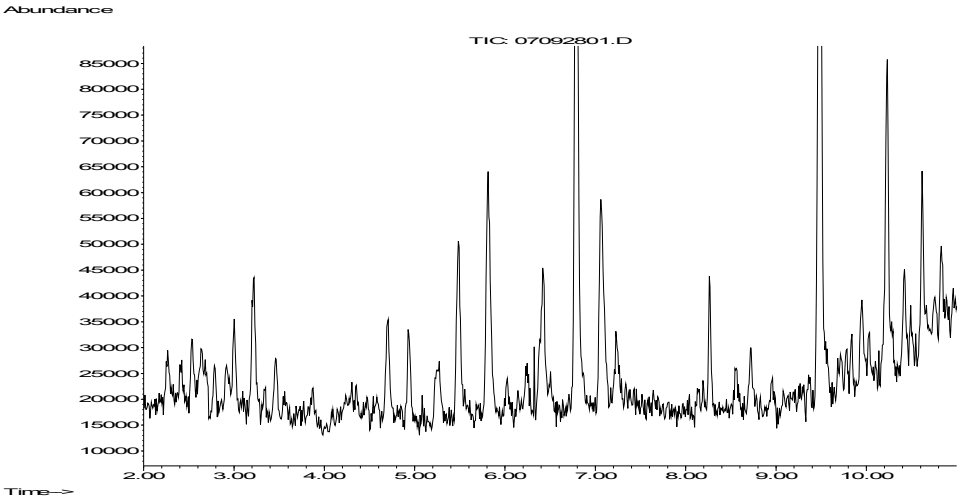
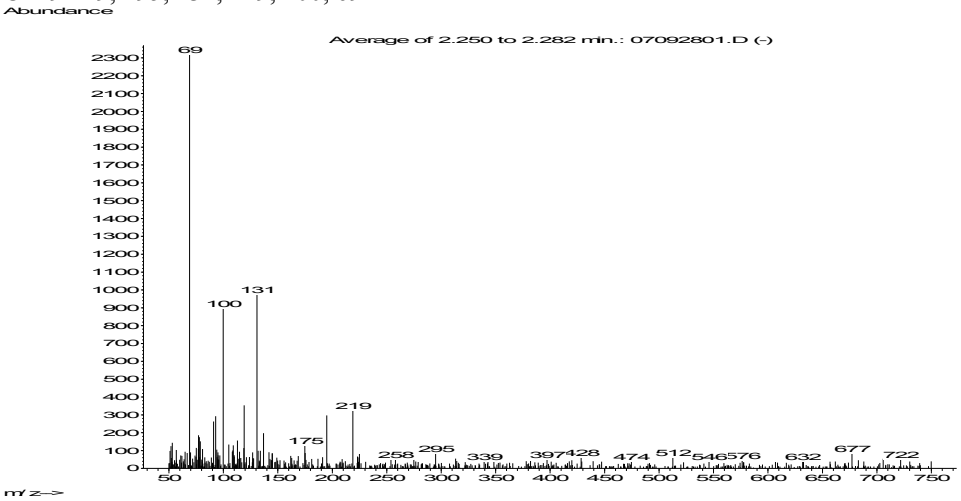


Fig. S6. Correlation between perfluorooctyl iodide concentration and its CF_3 area.

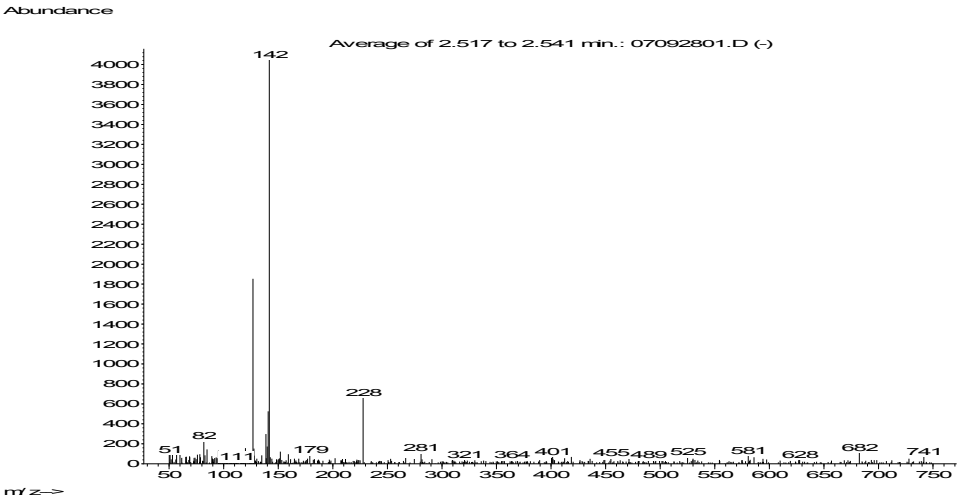
Fig. S7 (below). Total ion chromatogram (TIC) of gaseous intermediates trapped during the course of 2.5h-photolysis of aqueous PFOS with KI of 10 mM, and extracted ion chromatograms (EIC).



C4F9 219, 195, 131, 119, 100, 69



C2F4HI 228, 142, 127, 69



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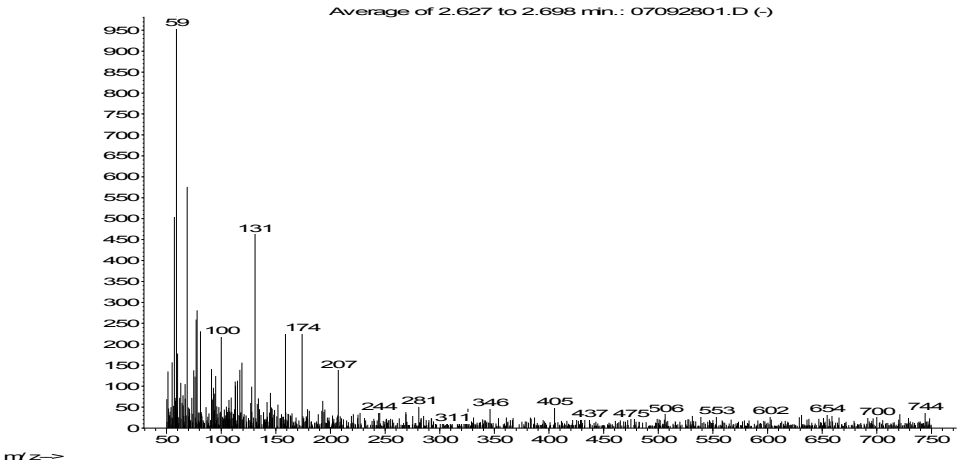

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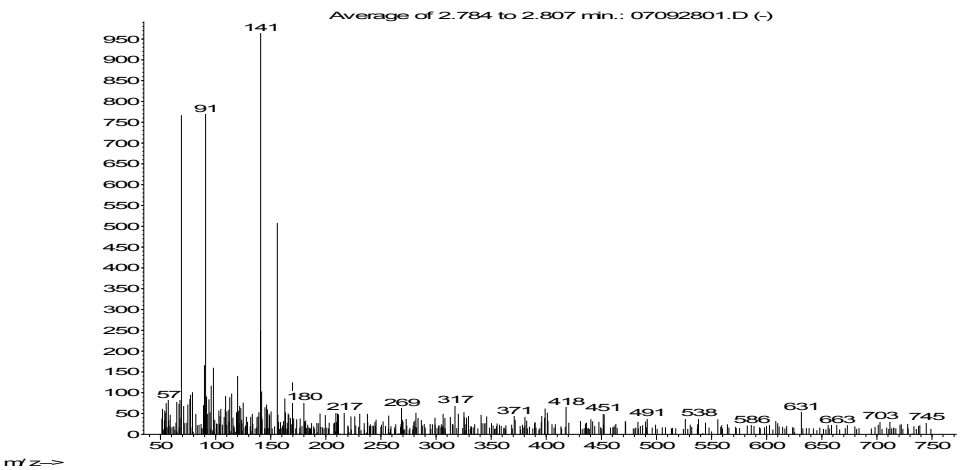

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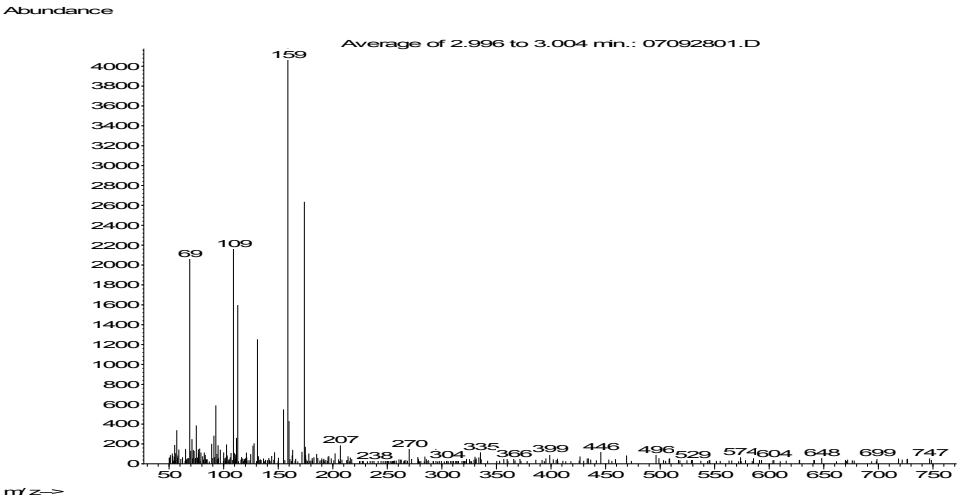

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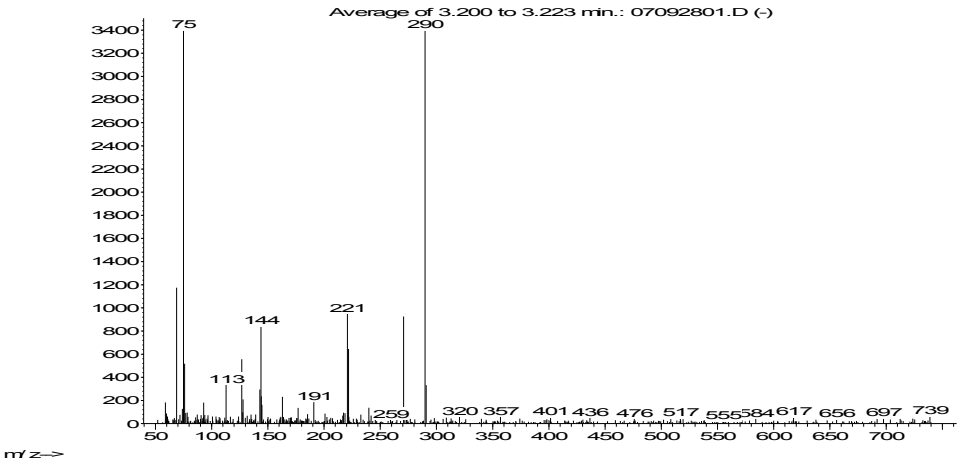

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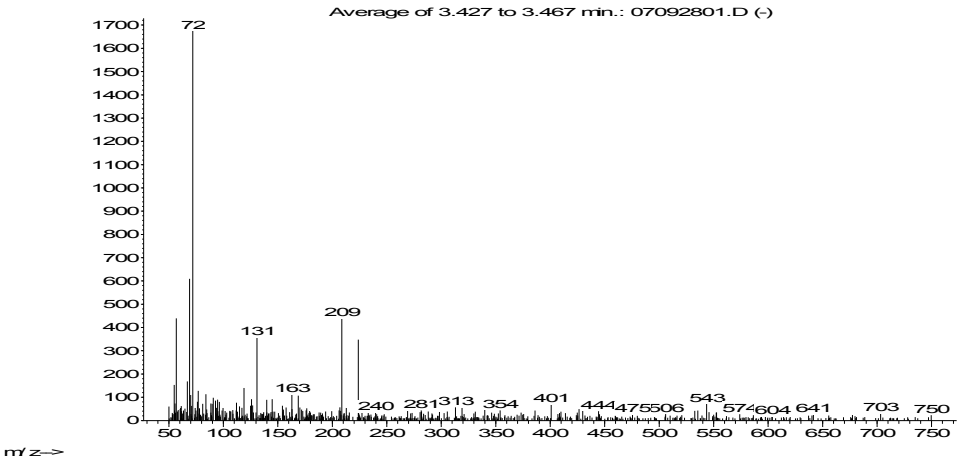

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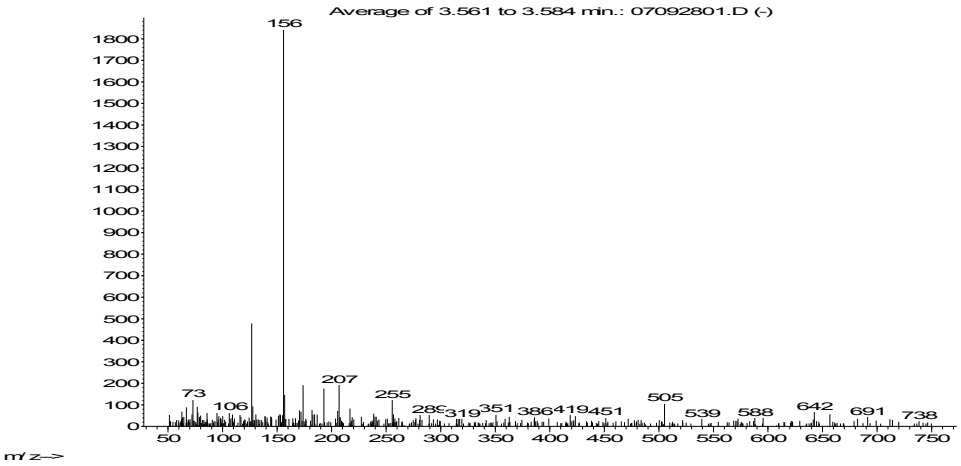

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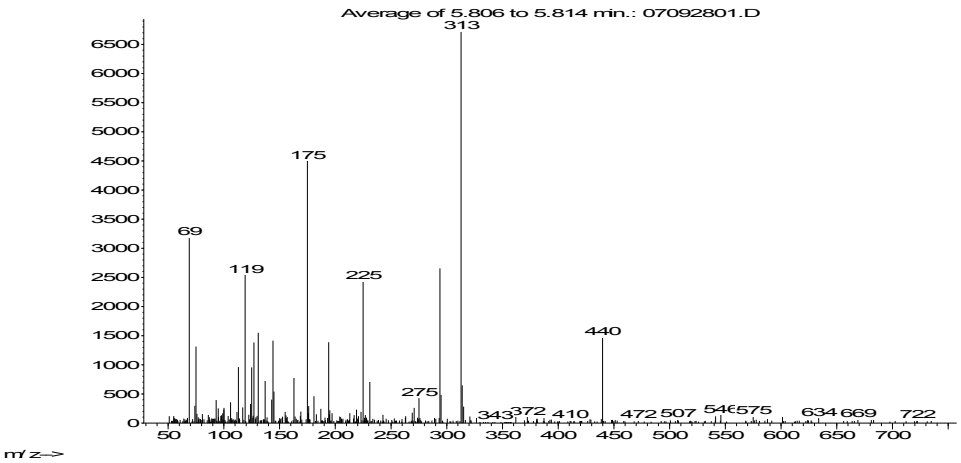

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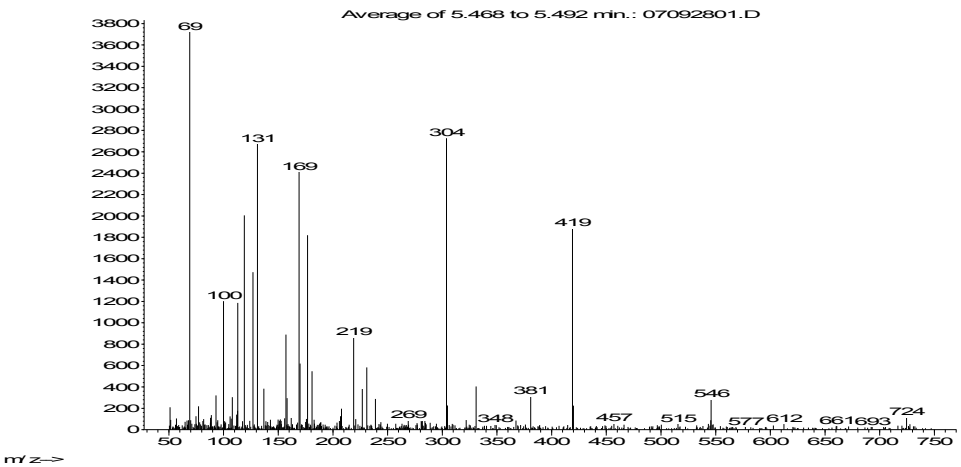

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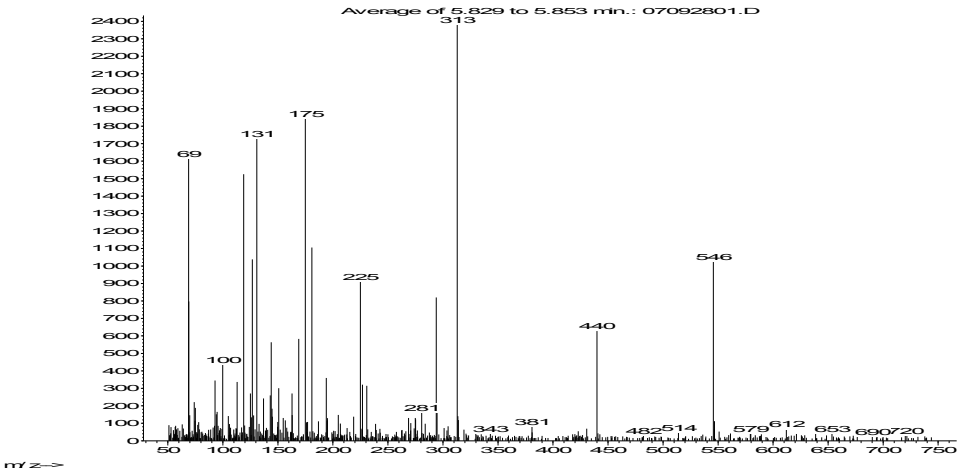

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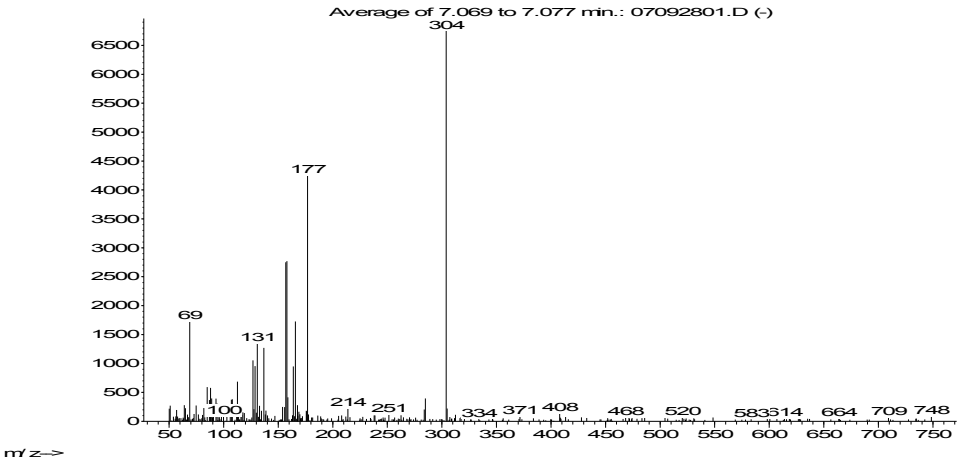

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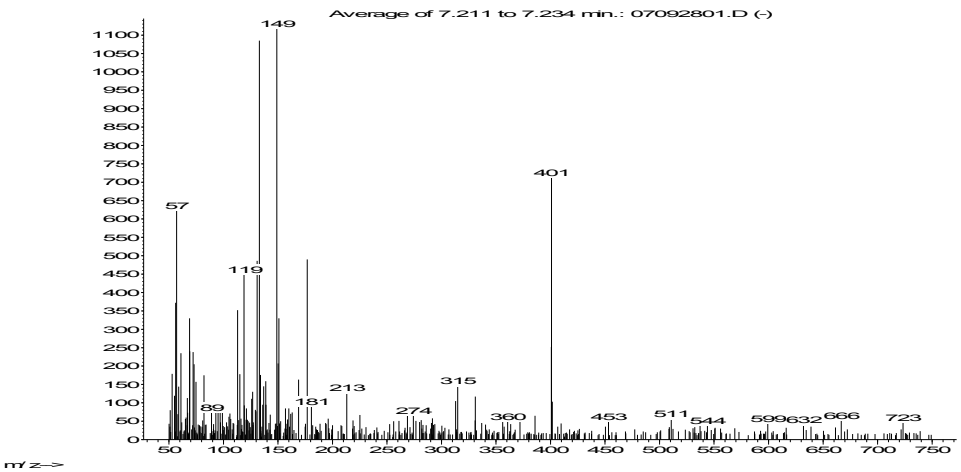

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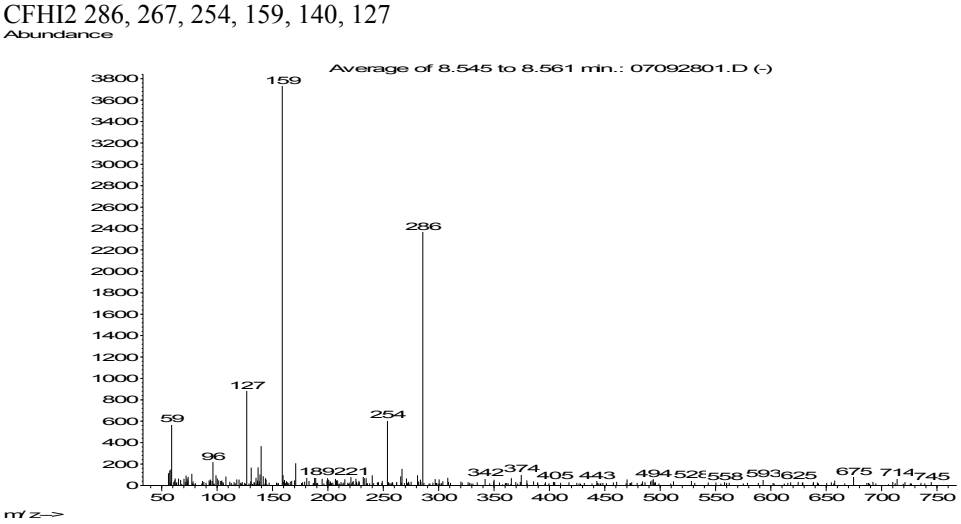

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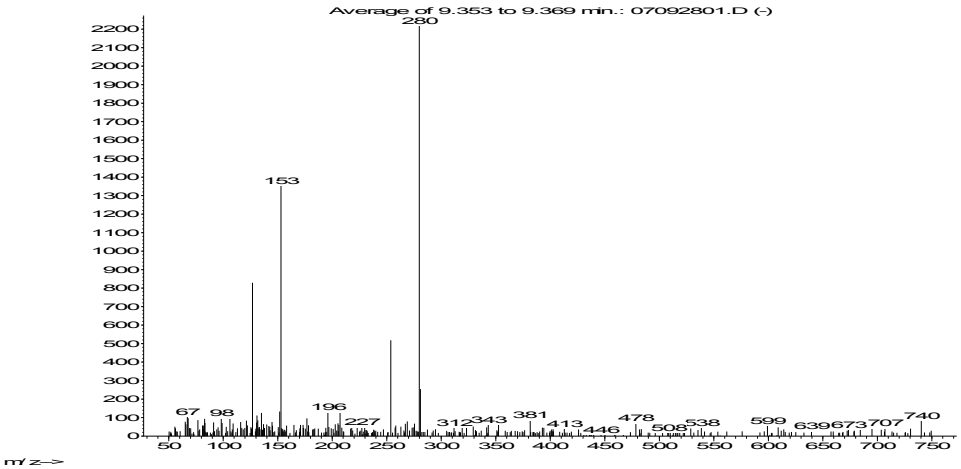

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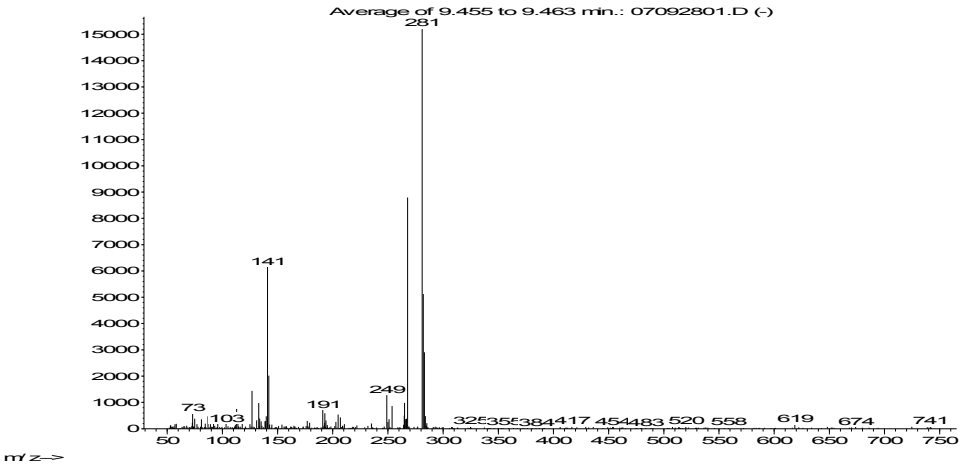

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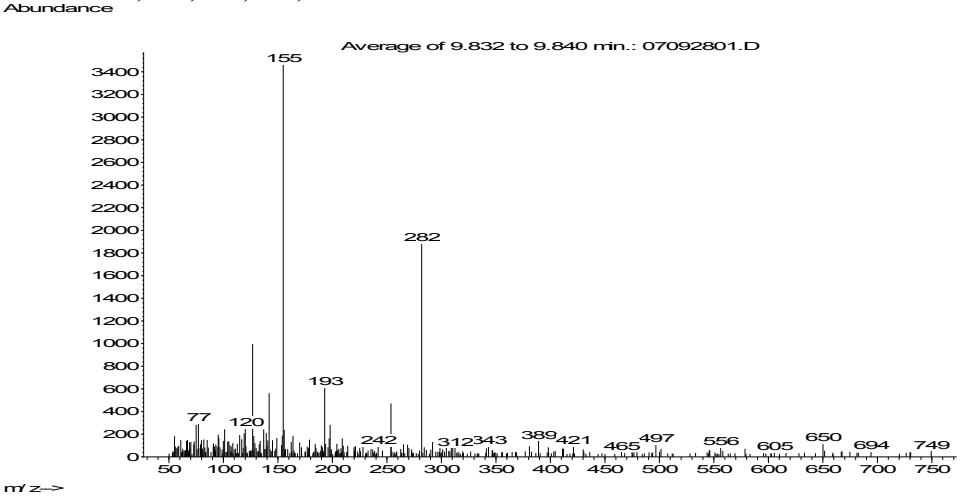
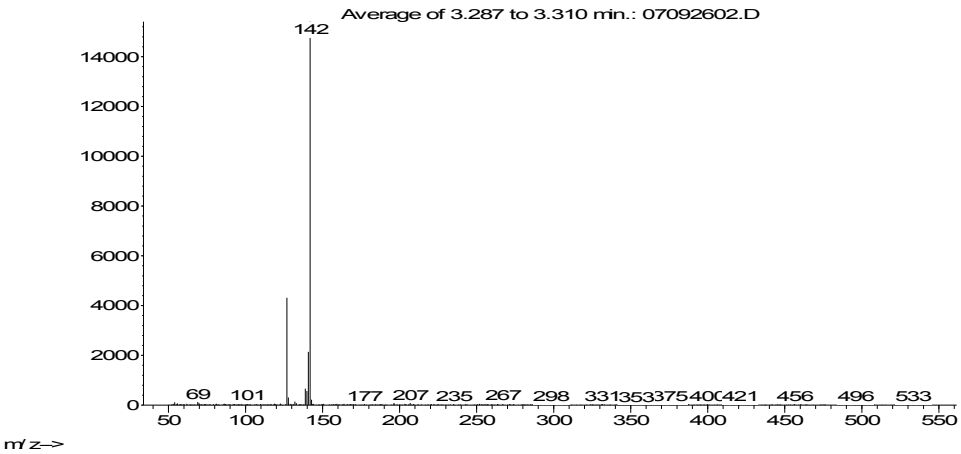


CH3I 142, 127



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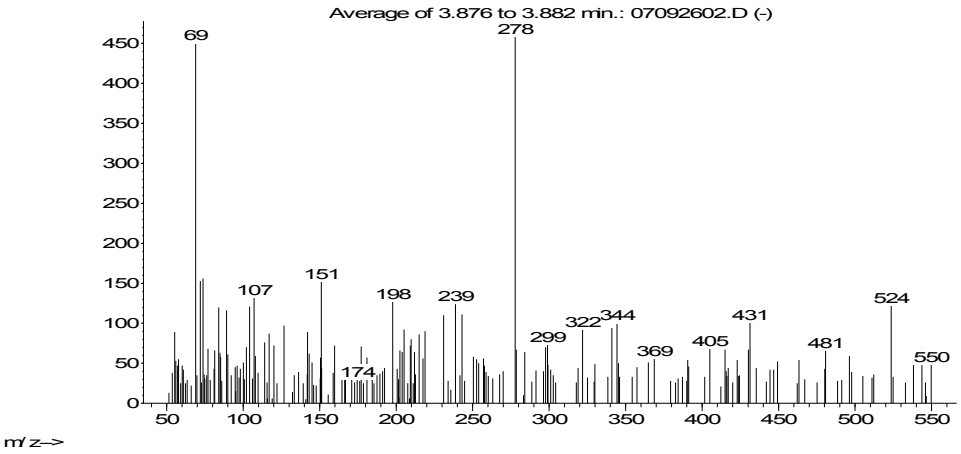

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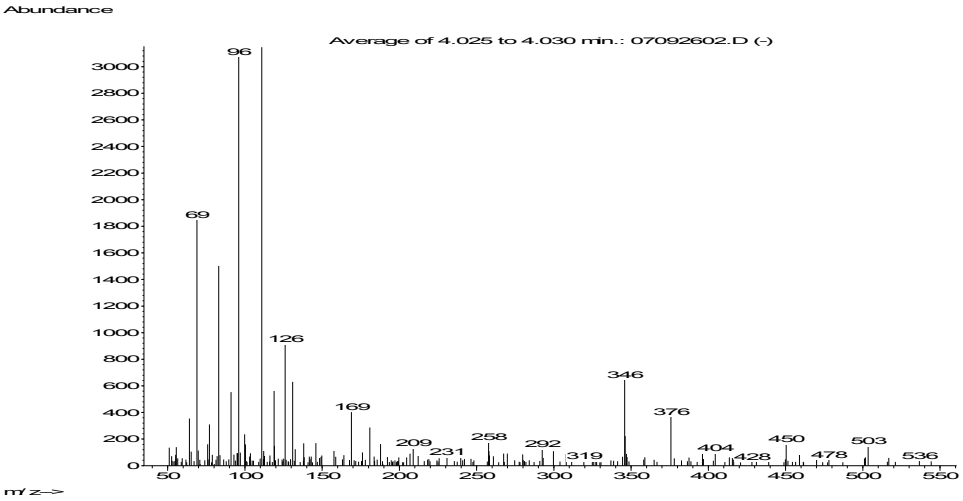

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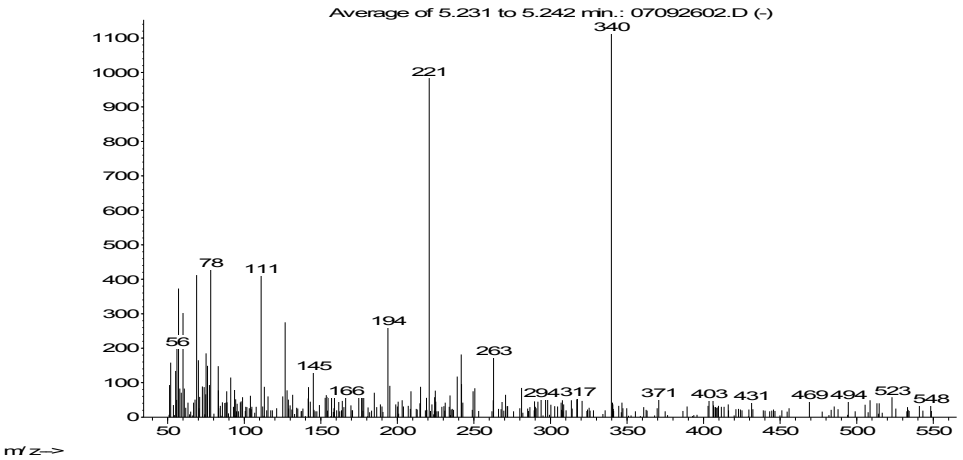

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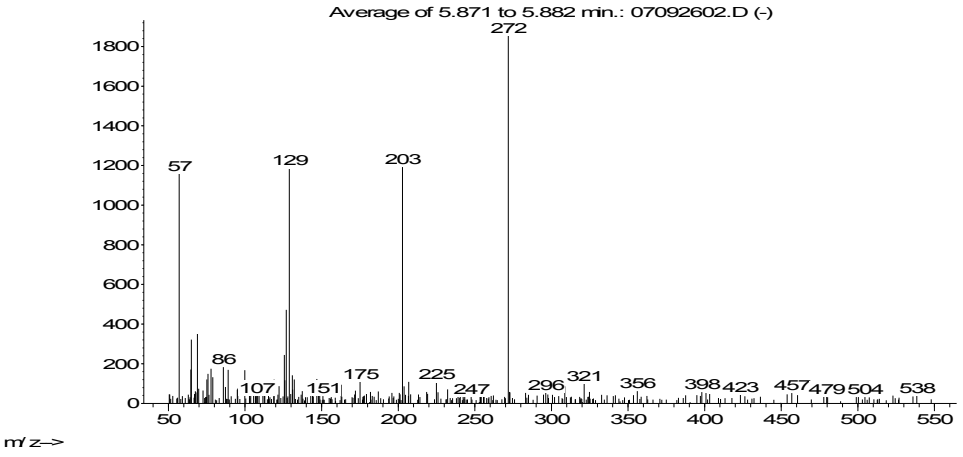

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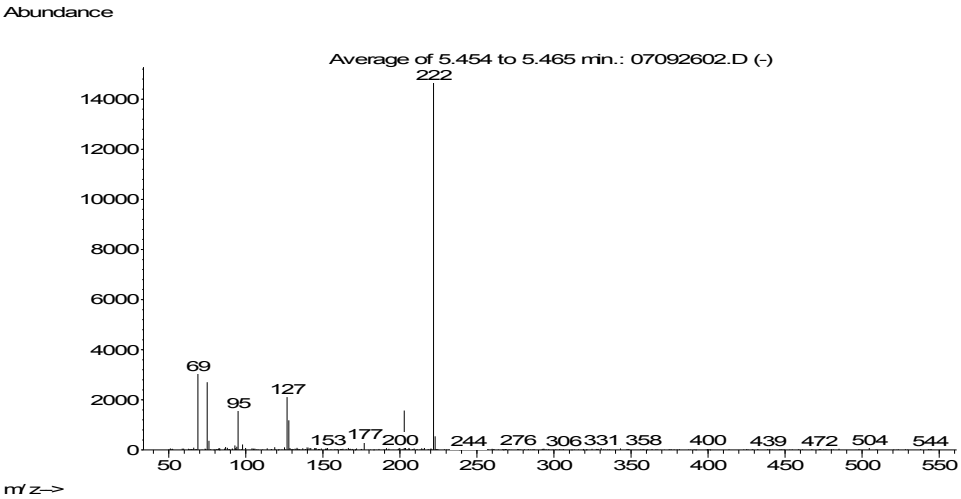

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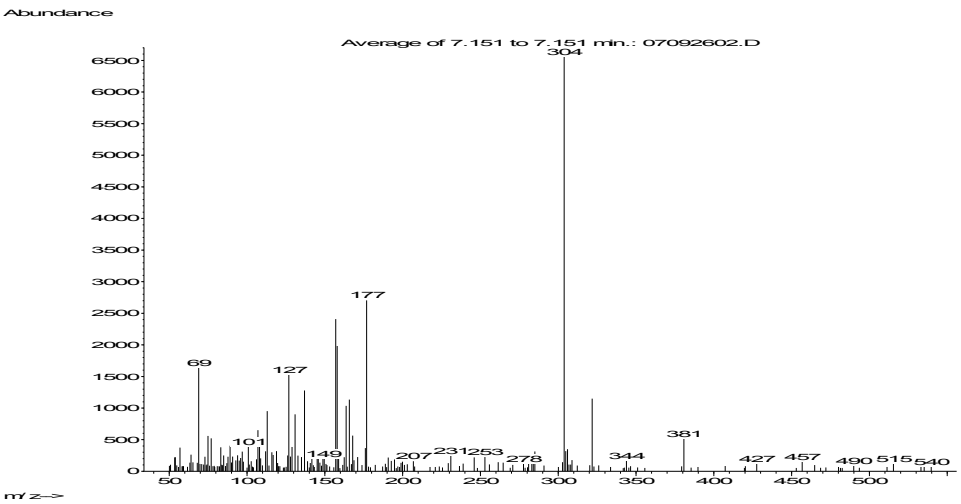

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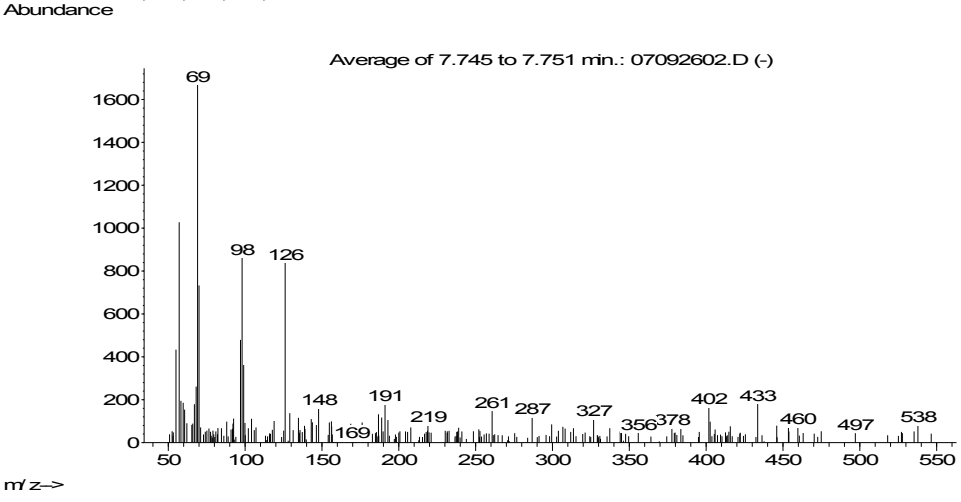

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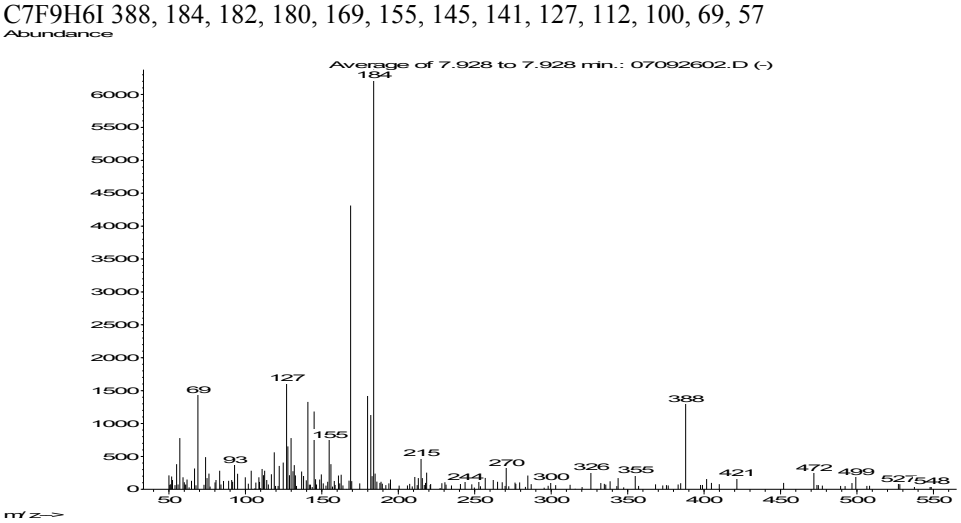

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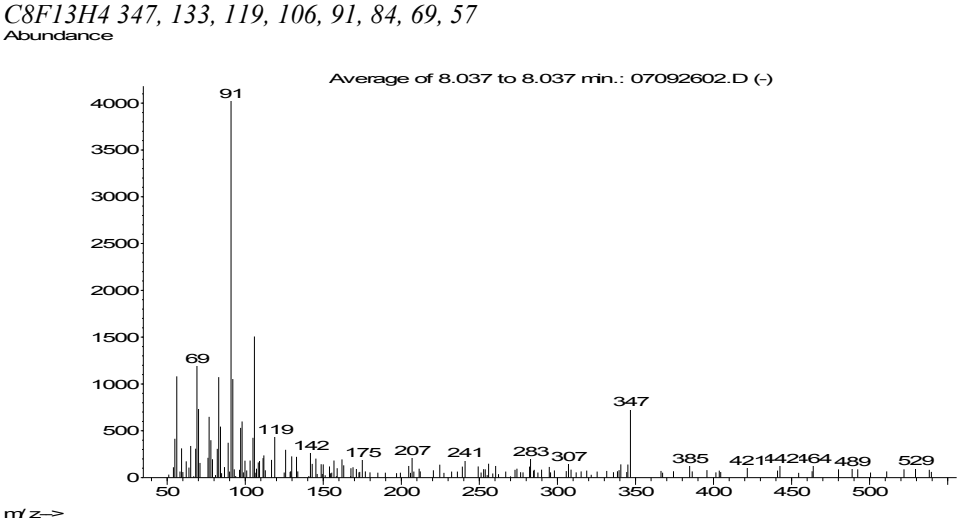

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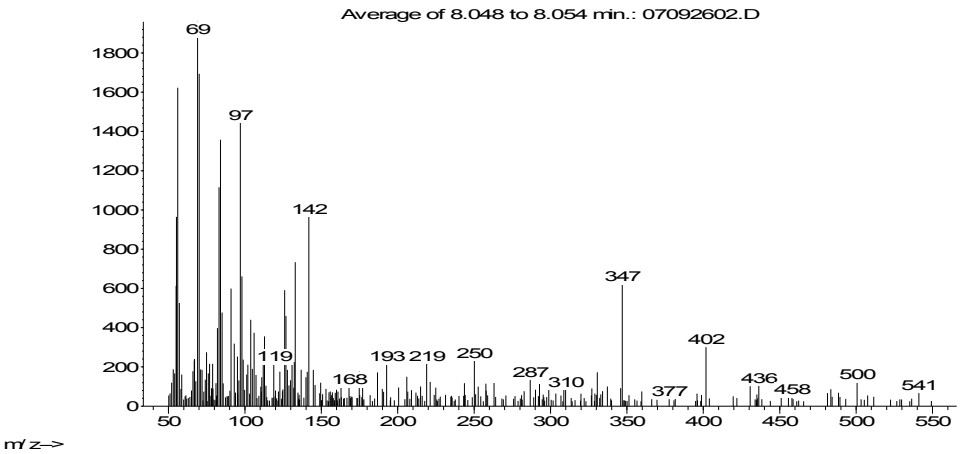

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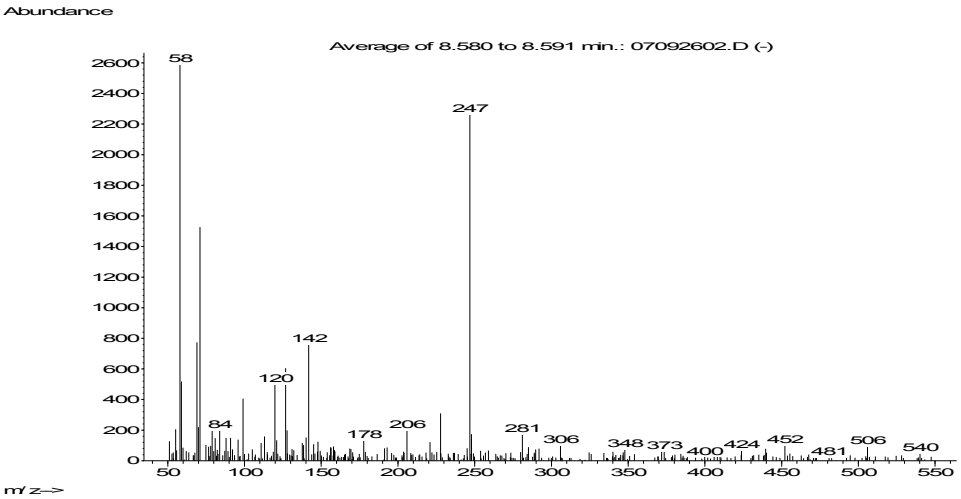

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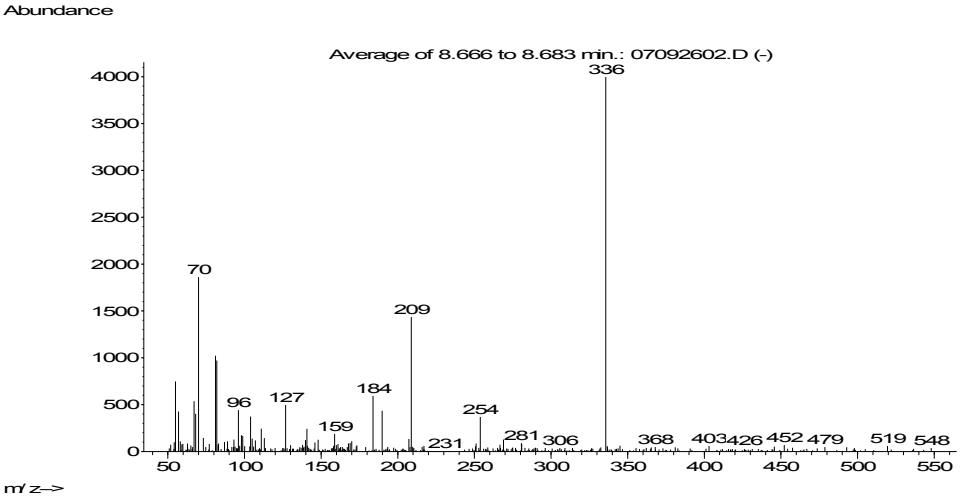

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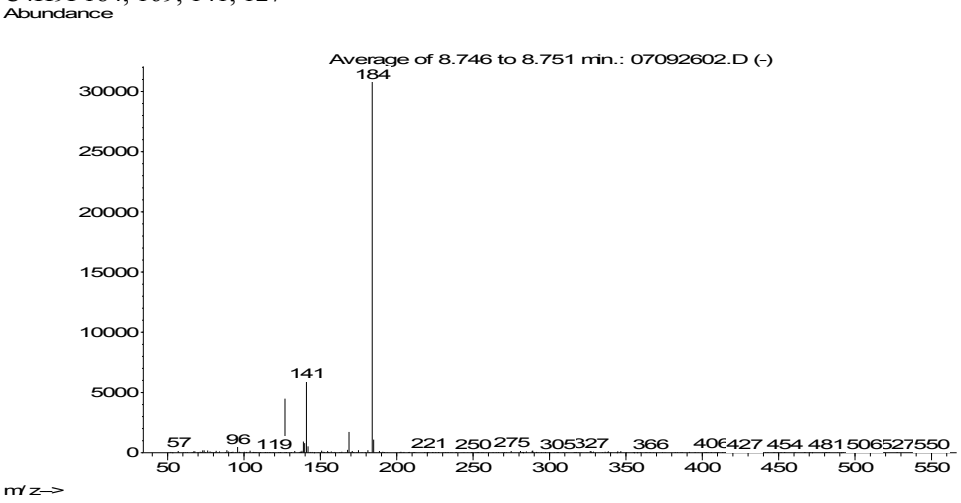

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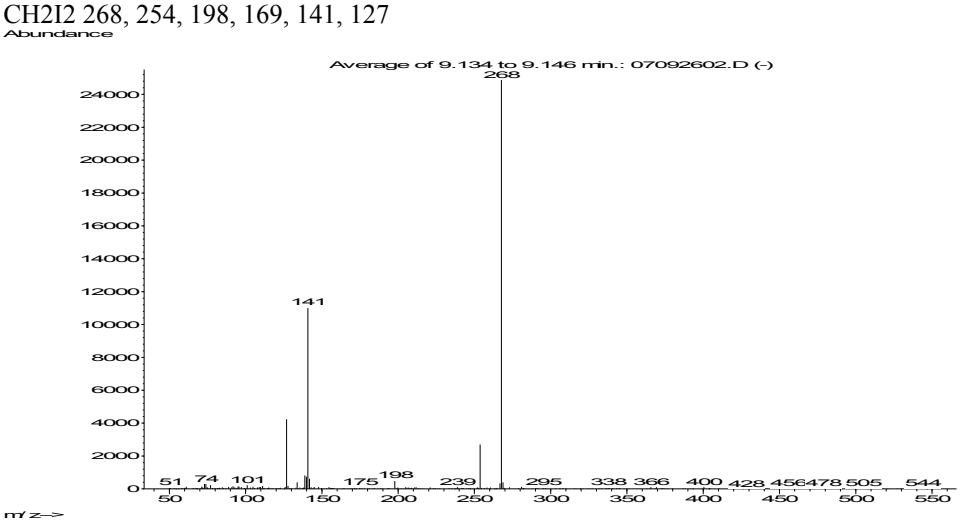
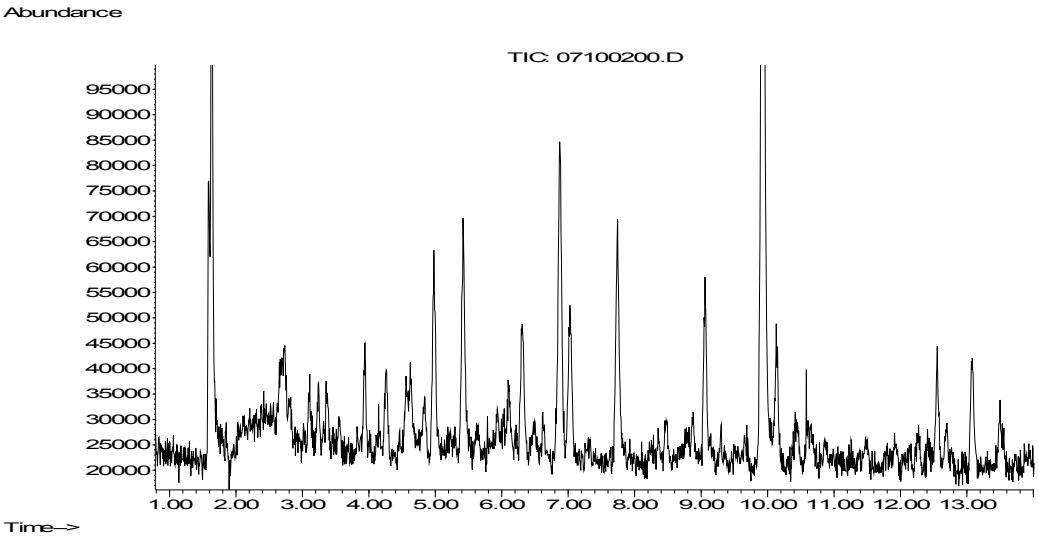


Fig. S8 (below). Total ion chromatogram (TIC) of gaseous intermediates trapped during the course of 2.5h-photolysis of aqueous PFOA with KI of 10 mM, and extracted ion chromatograms (EIC).



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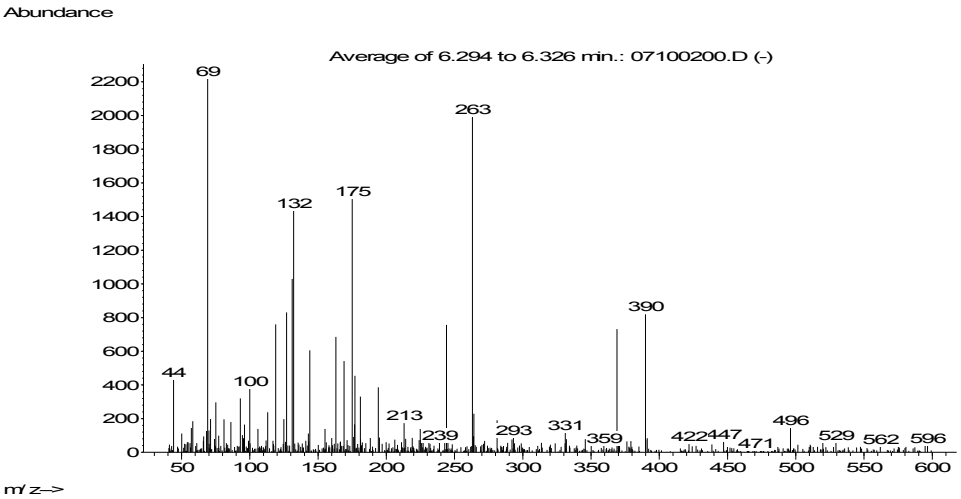

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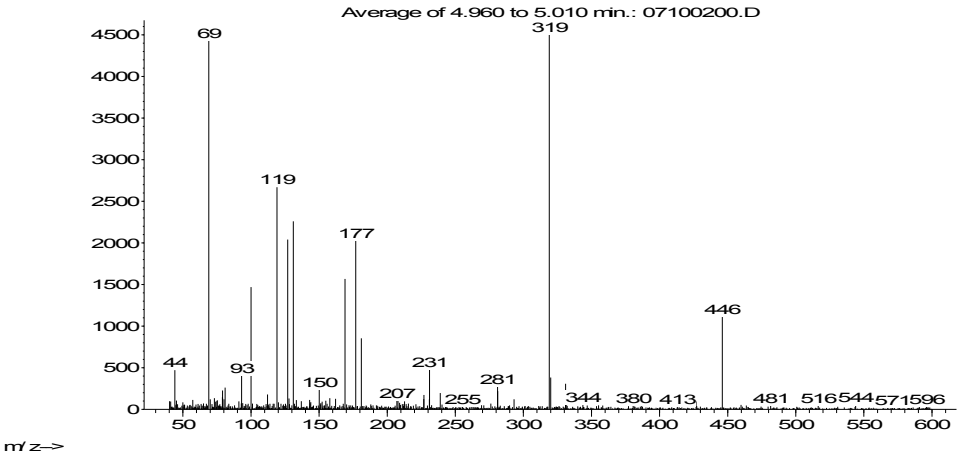

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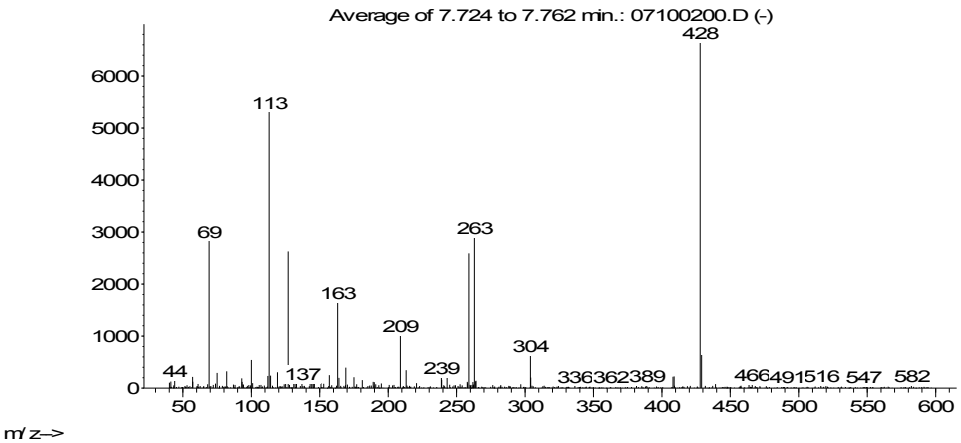

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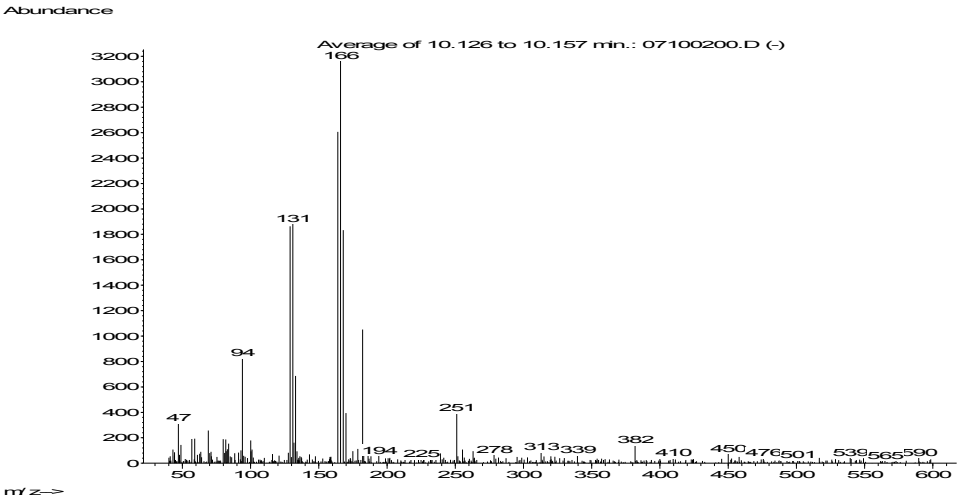

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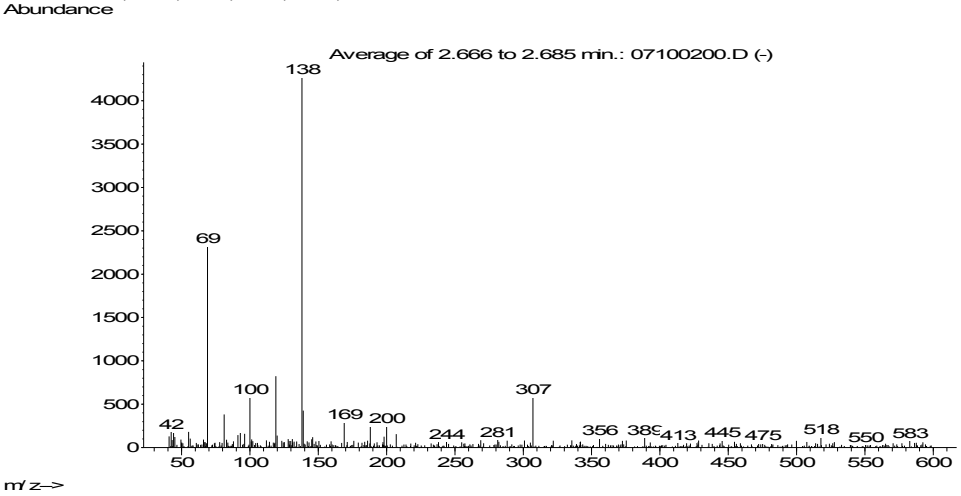

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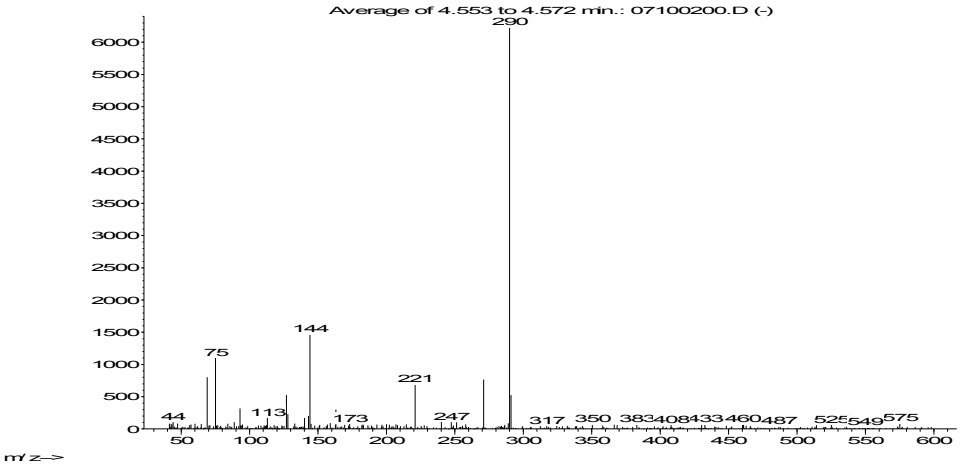
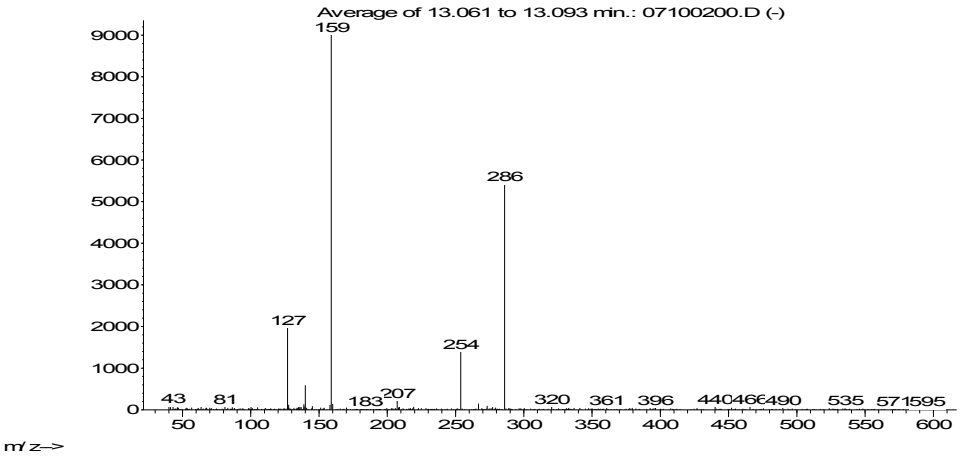


CFHI2 286, 254, 141, 127



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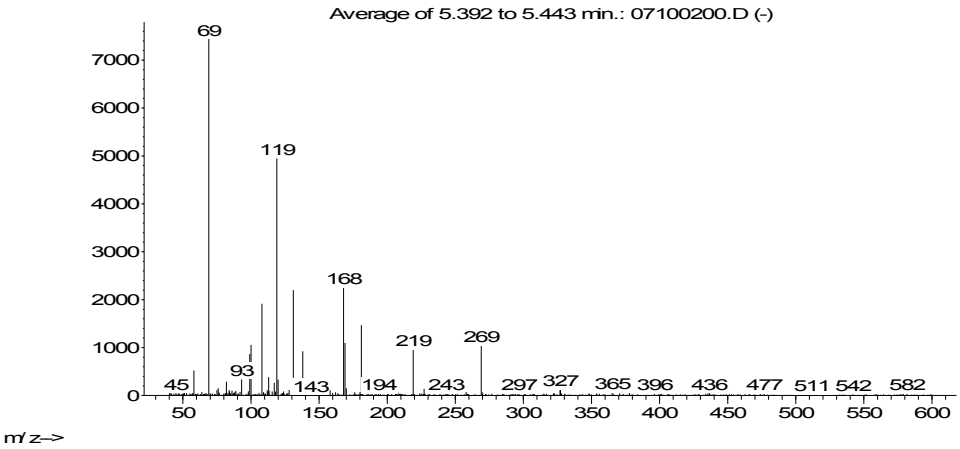

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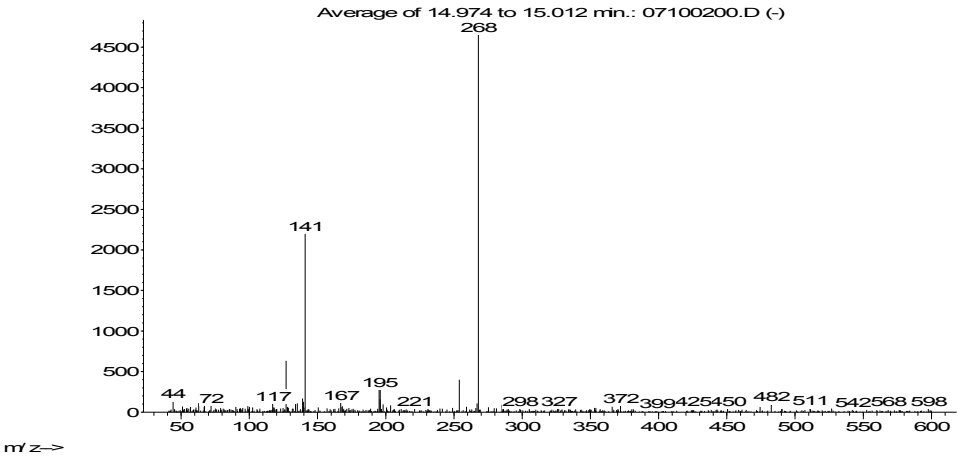

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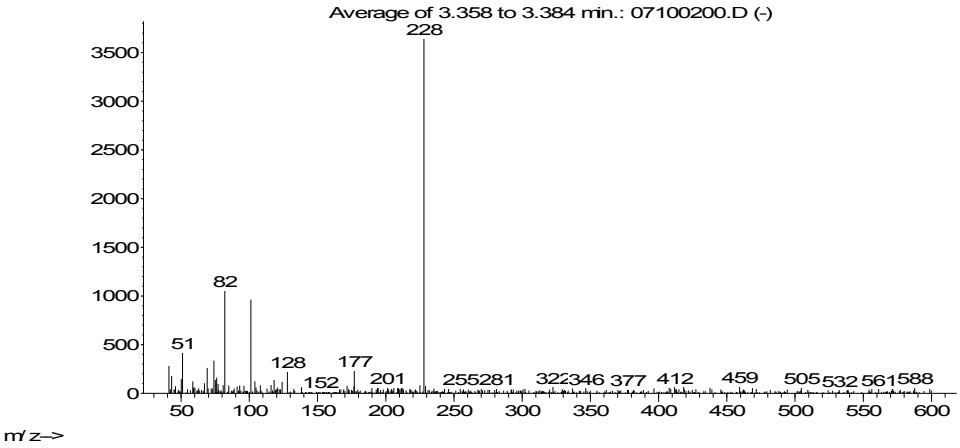

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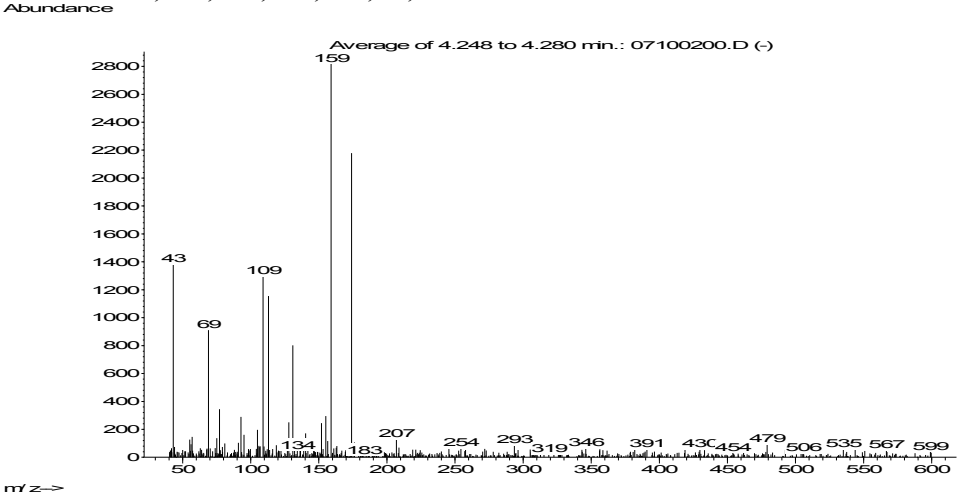

CH3I 142