

# Mass Spectrometry Studies of Hydrocarbon Dissociation in Atmospheric Pressure Microplasma

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***Abstract***— Mass spectrometry is a vital tool used for characterizing traditional and plasma chemical reaction processes. Recently, atmospheric pressure microplasmas have received attention as an effective mode for synthesizing carbon nanoparticles, particularly nanodiamonds, from hydrocarbon precursors. As yet, the reaction chemistry and efficiency of these processes are not well understood. In this ongoing research, mass spectrometry is utilized as the primary tool for analyzing how these hydrocarbon precursors react and dissociate within an atmospheric pressure microplasma environment.