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**Dielectric Barrier Discharge Methane Conversion** CHONG LIU, ALEXANDER FRIDMAN, ALEXANDER RABINOVICH, DANIL DOBRYNIN, Drexel plasma institute, Drexel university — With the large amount of nature gas discovery every year, there is an increasing interest on modification of methane. The fact that methane is gaseous makes it less economic and efficient than liquid fuel. Here we propose a new way of converting methane from gas phase to liquid phase. Dielectric barrier discharge is used to treat methane and nitrogen mixture bubbles inside of liquid fuel. Nitrogen is here to help activate methane into an excited state, then it is possible for the excited molecules to react with other liquid hydrocarbon. Gaseous methane is converted in to liquid phase when excited methane replace a hydrogen and add onto the carbon chain. In this study some preliminary experiments is done to verify this hypothesis. There is equivalent weight increases with methane and nitrogen mixture discharging in diesel when compare to only nitrogen discharging in diesel. The same experiment have also been done with gas mixture discharged in 1-methylnaphthalene. And FTIR analysis of the after treatment hydrocarbon liquid all indicates that there is an increasing in C-H bond concentration and a decreasing in phenyl ring structure.

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