

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Chemical reaction by atmospheric pressure pulsed discharge plasma in capillary gas/liquid slug flow. MOTONOBU GOTO, MOTOKI YAMADA, KAKERU MANO, WAHYU DIONO, NORIHARU TAKADA, HIDEKI KANDA, Nagoya University — Non-equilibrium atmospheric-pressure plasma in gas/liquid slug flow in a capillary tube was developed. Some chemical reaction were demonstrated induced by the developed plasma system. The water containing CBB (coomassie brilliant blue R-250) dye and various gas species were used as a liquid and a gas phases. The optical emission spectra indicated that the different reactive oxidation species were generated by each gas when the pulsed discharge plasma was applied into the slug flow reactor system. The oxygen base reactive species were found abundantly by each gas phase, and the amount of them was estimated by potassium iodide-starch solution. The decoloration of CBB dye occurred by the decomposition. The UV-Vis spectrophotometer showed that the order of CBB dye decomposition rate was: oxygen >air >nitrogen >argon >helium. Silver nanoparticles were also synthesized from silver nitrate solution. To prevent agglomeration of produced nanoparticle, starch was used as a dispersant. The average particle diameter of silver was around 6 nm and 4 nm for argon and helium, respectively used as gas phase.

Motonobu Goto
Nagoya University

Date submitted: 06 Jun 2018

Electronic form version 1.4