

Abstract Submitted  
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**Computational investigations of streamers in a single bubble suspended in distilled water under atmospheric pressure conditions**<sup>1</sup> ASHISH SHARMA, DMITRY LEVKO, LAXMINARAYAN RAJA, University of Texas at Austin — We present a computational model of nanosecond streamers generated in helium bubbles immersed in distilled water at the atmospheric pressure conditions. The model is based on the self-consistent, multispecies and the continuum description of plasma and takes into account the presence of water vapor in the gas bubble for a more accurate description of the kinetics of the discharge. We find that the dynamic characteristics of the streamer discharge are completely different at low and high over voltages. We observe that the polarity of the trigger voltage has a substantial effect on initiation, transition and evolution stages of streamers with the volumetric distribution of species in the streamer channel much more uniform for negative trigger voltages due to the presence of multiple streamers. We also find that the presence of water vapor significantly influences the distribution of the dominant species in the streamer trail and has a profound effect on the flux of the dominant species to the bubble wall.

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