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Nanosecond-pulsed oxygen DBD treatment of water and production of "plasma acid"

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Plasma treatment of water has been investigated extensively for the last decade in relation to a number of promising applications in biomedical, environmental, and agricultural fields as well as food processing. Plasma treated water typically has high oxidative properties and wide range of reactive species produced including ·OH, ·O, H2O2, NO3-, ONOO-. In this study we focus on DBD plasma in oxygen or oxygen/noble gas mixtures which has been shown to produce acidic water solutions, sometimes referred as "plasma acid", with strong but temporary oxidizing properties. The conjugate base of this oxygen plasma-produced acid remained unidentified. The results presented here suggest that "plasma acid" contains unstable O2- and O3- as possible anion species.

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Authors: ROBINSON, Ryan (Drexel University); FRIDMAN, Alexander (Drexel University); DOBRYNIN, Danil (Drexel University)

Presenter: DOBRYNIN, Danil (Drexel University)

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