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Fluorescent Characteristics of respiratory aerosol generated by a variety of speech and therapy activities.

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The importance of bio-aerosols across the earth system has been known for some time. With the unfortunate situation arising from the COVID19 pandemic, attention has turned to appropriate detection technologies that could be used to better understand the contribution of aerosols generated from the lung in various settings. In this project, the wideband Integrated Bioaerosol Sensor (WIBS-NEO) was deployed in a zero-background clinical environment which permitted the aerosols measured to be directly ascribed to specific vocalisations undertaken. The fluorescent signatures of expelled aerosol from a variety of human participants were captured during individual speech and language therapy activities (speaking, humming, sustained phonation, fricatives, projection, and tongue trills). In this presentation we present the varying fluorescent signatures and particle morphologies.

Furthermore, millions across the UK have now adopted face coverings into their day to day lives with one of the most widely adopted and commonplace being the disposable surgical face mask. Yet, questions still remain as to what types of vocalisations produce the most aerosols and the efficacy of the face mask in reducing transmission. To supplement this, measurements with the WIBS-NEO were conducted where participants did not wear a mask, and then subsequently repeated wearing a surgical mask. The fluorescent intensity, concentration (cm^3), size (um), and asphericity were then compared for each activity with and without a mask.

WIBS-NEO information:

https://www.dropletmeasurement.com/product/wideband-integrated-bioaerosol-sensor/

Example paper using the WIBS:

E.Toprak and M. Schnaiter, *Atmos. Chem. Phys.*, 2013, **13**, 225–243.