

Thermal-optical analysis of snow samples – challenges and perspectives introduced via the occurrence of mineral dust

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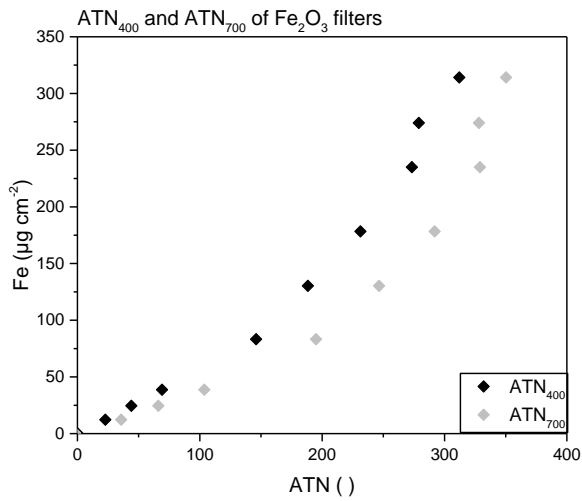


Figure S1: Relationship of Fe loading and ATN₇₀₀ and ATN₄₀₀.

As the transmittance values of the unloaded quartz fiber filters at room temperature could not be determined retrospectively, the median transmittance of 14 unloaded blank filters (3352 a.u.) was used to approximate I_0 . ATN₄₀₀ and ATN₇₀₀ relate the transmittance at the respective temperatures to this median value. The data pairs (ATN₄₀₀ and ATN₇₀₀) determined for each Fe loading refer to the same filter and compare well, although the value of I_0 is approximated. Obvious differences in the true values of I_0 lead to the inconsistencies observed between the data pairs, which are more pronounced at the upper end of the curves. At low Fe loadings the relationship between ATN₄₀₀ and ATN₇₀₀ can be approximated by a linear relationship, but saturation due to artefacts related to filter effects is observed at higher loadings. This effect occurs earlier for ATN₇₀₀.

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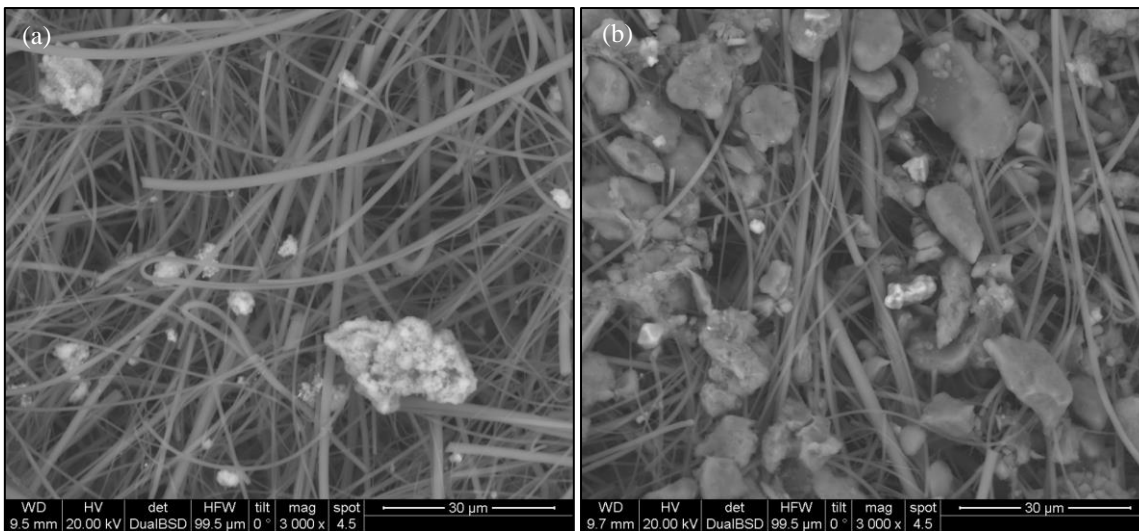


Figure S2: SEM images of a quartz fiber filter loaded with Fe₂O₃ (a) and with liquid snow (b).

The images, recorded using backscattered electrons, show the atomic number contrast. Due to Fe's high atomic number, particles containing Fe are shown in a brighter color than the filter material or particles with different composition.

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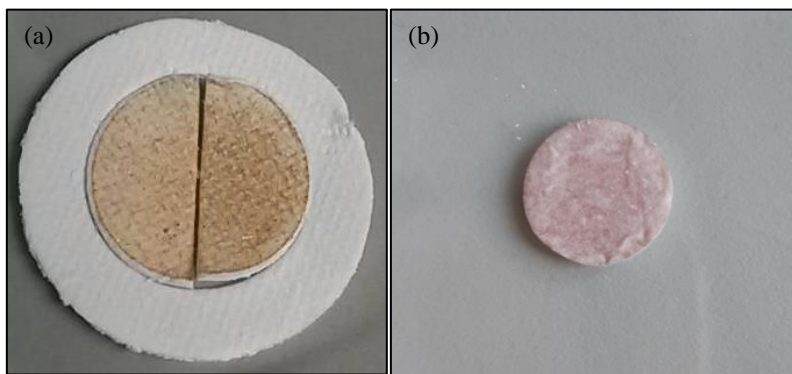


Figure S3: Photos of a filter loaded with liquid snow containing MD (a) and a filter sampled in the railway tunnel (b) after TOA.

Different coloring of residues remaining on the quartz fiber filters loaded with liquid snow and collected in the railway tunnel after TOA.

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