

## **Soot emitted from domestic stoves during solid fuel combustion**

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Soot emitted to atmosphere acts as important factor of global warming and impacts strongly human health.

Soot samples collected from domestic heating systems were studied. A studied material is composed of small (ca. 100 nm) carbonaceous particles forming agglomerates. Interpretation of Raman spectra indicates that soot samples differ in the degree of ordering. Different degree of ordering was also noted for domains within one sample. The ATR-FT-IR study of soot revealed the presence of aliphatic and aromatic C–H groups as well as various oxygen-containing organic moieties, i.e. C=O, C–O–C, and –C–OH. Besides, the characteristic absorption bands at ca. 1625 and 3419 cm<sup>-1</sup> indicate the abundant amount of physically adsorbed water related to mineral matter.

Non carbonaceous matter, present as irregular forms or spherical particles, was studied using SEM-EDS method. Dominant mineral components determined using XRD are: sal ammoniac, quartz, arkanite, mascagnite, anhydrite, bassanite.  $\delta^{13}\text{C}$  values varies from -22.37 to -32.60‰ (average -24.80‰). Content of different chemical elements in soot varies within broad range, e.g.: As from 707 to <0.1 ppm; Pb from 20434 to 53 ppm; Se from 100 to 0.3 ppm; Zn from 7392 to 233 ppm; Hg from 15443 to 19 ppb. Content of elements in water leachates is also variable, e.g.: As from 2160 to 41 µg/L; F from 4.3 to 3.6 mg/L; Cl from 373 to 79 mg/L.

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