

Carbon forms in coal, fly ash and bottom ash

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The project CHARPHITE aims at recovering unburned carbon from coal ashes. The carbon forms (C_{org} – organic; C_{gra} – graphite; C_{CO_2} – inorganic) were analysed on coal and respective fly ash (FA) and bottom ash (BA) from four power plants (Portugal, South Africa, Poland, and Romania). The Total C varies in the BA from 0.33% to 13.69%, which is an indicator of the influence of combustion conditions.

The coals are almost all composed of C_{org} , the C_{gra} is very low (< 0.10%), and C_{CO_2} is low (0.16% to 2.53%). In the ashes the C_{CO_2} is very low (<0.02% to 0.97%), and the C_{gra} and C_{org} occur approximately in equal parts but in variable concentration, except the Romanian BA studied where C_{gra} is very low (<0.45%). These results show that the amount of carbon forms is not predictable from one power station to another in terms of sampling location and thus representing a challenge for carbon recovery.

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