

## Diesel Engine Soot Particles: Structure and Oxidative Behaviour in Catalytic Combustion

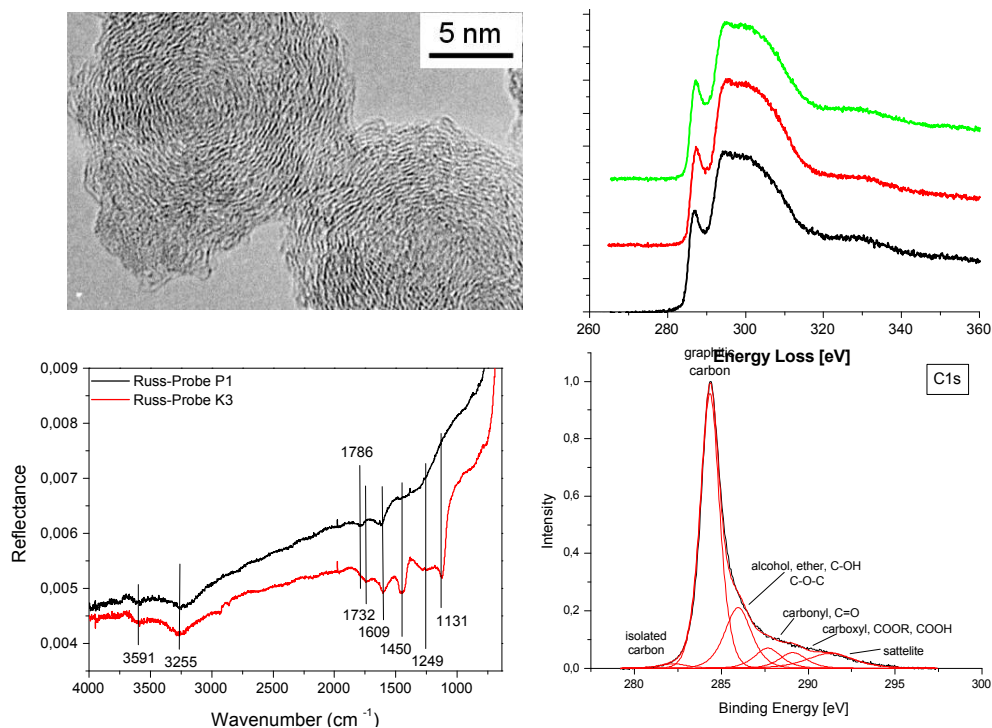
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### Abstract

A system to reduce soot particles with a temporarily particle deposition on a filterless catalyst system with continuous regeneration is developed. The aim is a soot free diesel engine without particle filter to reach the EURO IV/V limit values. The main interests are focused on the morphology and electronic state of the particle agglomerates as well as the surface functional groups. The morphology of the soot is characterised by means of TEM and HRTEM. The characterisation of the electronic structure is performed with EELS. XPS and DRIFTS are applied to reveal surface properties of the soot particles. The particles are highly functionalized with several oxygen groups. Their initial surface is low graphitic. It is expected that an inhomogeneous oxidation behaviour will occur, with the tendency to form well graphitized residues difficult to oxidise.



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