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(54) Title: MATERIALS COMPRISING CARBON-EMBEDDED IRON NANOPARTICLES, PROCESSES FOR THEIR MANUFACTURE, AND USE AS HETEROGENEOUS CATALYSTS

(57) Abstract: 201900257 Ausland 18 Abstract The present invention relates to catalytically active material, comprising grains of non-graphitizing carbon with iron nanoparticles dispersed therein, wherein dp , the average diameter of iron nanoparticles in the non-graphitizing carbon grains, is in the range of 1 nm to 20 nm, D , the average distance between iron nanoparticles in the non-graphitizing carbon grains, is in the range 5 of 2 nm to 150 nm, and ω , the combined total mass fraction of metal in the non-graphitizing carbon grains, is in the range of 30 wt% to 70 wt% of the total mass of the non-graphitizing carbon grains, and wherein dp , D and ω conform to the following relation: $4.5 dp / \omega > D \geq 0.25 dp / \omega$. The present invention, further, relates to a process for the manufacture of material according to the invention, as well as its use as a catalyst. 10