

CONTRIBUTION TO GASOLINE ENGINES EXHAUST GASSES POLLUTION REDUCTION UNDER COLD START CONDITIONS, BY CATALYSTS IMPROVEMENT AND HEATING

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The cold start of gasoline engines is characterised by higher pollutant emission and lower catalyst efficiency because the inconvenient conditions for their light-off. In this paper the catalyst modification, together with appropriate heating, as a possibility of conversion improvement in automotive exhaust gasses, was investigated. Therefore, the influence of chemical and phase composition on automotive exhaust emission control catalyst starting temperature, activity in usual operating temperature interval and texture was examined.

The efficiency and physicochemical characterisation of catalysts with different active component combination was performed at pulse-flame laboratory reactor and observed by X-Ray powder diffraction (XRD), IR-spectroscopy (IR), scanning electron microscopy (SEM), electron microscopy (EMA), mercury porosimetry (MP) and low-temperature nitrogen adsorption (LTNA). The determined difference, in optimal working temperature intervals of investigated catalysts points out their convenience in cold start phase. For the effects which could not have been achieved economically thorough catalyst optimisation, the selection of place, manner and control of heating was considered.

Key words: catalysts, cold start, IC engine

SMANJEJE ZAGAĐENJA IZDUVNIM GASOVIMA BENZINSKIH MOTORA U USLOVIMA HLADNOG STARTA KORIŠĆENJEM KATALIZATORA I TOPLOTE

Hladan start benzinskih motora se karakteriše povišenom emisijom izduvnih gasova i niskom efikasnošću katalizatora zbog nepovoljnih temperaturskih uslova. U ovom radu je proučena modifikacija katalizatora, uz odgovarajuće zagrevanje, kao jedna mogućnost poboljšanja prečišćavanja izduvnih gasova. U tom cilju proučen je uticaj početne temperature katalizatora kao i hemijski sastav izduvnih gasova.

Efikasnost fizičko-hemijska karakteristika katalizatora sa različitim kombinacijama aktivne komponente su istitivani u laboratorijskom reaktoru sa impulsnim plamenom i to putem X zraka, tj. njihove difrakcije, zatim IR spektroskopije, SEM skeniranje elektronske mikroskopije, EMA elektronske mikroskopije i niskotemperaturne nitrogenske adsorpcije LTNA. Utvrđene razlike proučavanih katalizatora, u optimalnim radnim temperaturskim intervalima, ukazuju na njihove pogodnosti u fazi hladnog starta. Za one efekte koji ne mogu da se ekonomično postignu optimizacijom katalizatora, razmotren je izbor mesta, načina i kontrole zagrevanja.

Ključne reči: katalizatori, hladan start, motor sus