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Michal Vojtisek-Lom, Martin Pechout, Luboš Dittrich, Vít Beránek, Martin Kotek, Jaroslav Schwarz, Petr Vodička, Alena Milcová, Andrea Rossnerová, Antonín Ambrož, Jan Topinka

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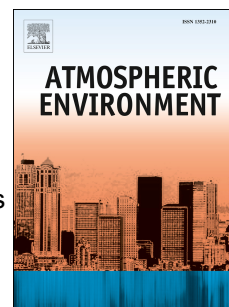
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Polycyclic aromatic hydrocarbons (PAH) and their genotoxicity in exhaust emissions from a diesel engine during extended low-load operation on diesel and biodiesel fuels.

Michal Vojtisek-Lom [a,b,corresponding author]

Martin Pechout, Luboš Dittrich [b]

Vít Beránek [a]

Martin Kotek [c]

Jaroslav Schwarz, Petr Vodička [d]

Alena Milcová, Andrea Rossnerová, Antonín Ambrož, Jan Topinka [e]

[a] Center of Vehicles for Sustainable Mobility, Faculty of Mechanical Engineering, Czech Technical University in Prague, Technická 4, 166 07 Prague, Czech Republic, michal.vojtisek@fs.cvut.cz, phone (+420) 774 262 854

[b] Department of Vehicles and Engines, Faculty of Mechanical Engineering, Technical University of Liberec, Studentska 2, 461 17 Liberec, Czech Republic

[c] Technical Faculty, Czech University of Life Sciences, Kamýcká 129, 165 21, Prague, Czech Republic

[d] Institute of Chemical Process Fundamentals of the Czech Academy of Sciences, Rozvojova 2/135, CZ-165 02 Prague 6 – Suchbátka, Czech Republic

[e] Institute of Experimental Medicine of the Czech Academy of Sciences, Vídeňská 1083, Prague 4, Czech Republic

Abstract

This paper investigates the effects of emissions including carcinogenic polycyclic aromatic hydrocarbons (cPAH) of a conventional diesel engine without a particle filter. Experiments were carried on during extended idle and during a loaded operation immediately following the extended idle. Extended low-load operation of diesel engines due to idling and creep at border crossings, loading areas and in severe congestion has been known to deteriorate the combustion and catalytic device performance and to increase the emissions of particulate matter (PM). A conventional diesel engine was coupled to a dynamometer and operated on diesel fuel and neat biodiesel alternately at idle speed and 2% of rated power and at 30% and 100% load at intermediate speed. Exhaust was sampled on fiber filters, from which the content of elemental and organic carbon and polycyclic aromatic hydrocarbons (PAH), including cPAH and benzo[a]pyrene (B[a]P) have been determined. The emissions of cPAH and B[a]P have increased 4-6 times on diesel fuel and by 4-21% on biodiesel during extended idling relative to a short idle and 8-12 times on diesel fuel and 2-20 times during subsequent operation at full load relative to

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