

Title (en)

NANOLAYER OXIDATION CATALYSIS FOR SMOKING ARTICLES

Title (de)

NANOSCHICHTOXIDATIONSKATALYSE FÜR RAUCHARTIKEL

Title (fr)

CATALYSE D'OXYDATION PAR NANOCOUCHE POUR DES ARTICLES A FUMER

Publication

**EP 2086361 A2 20090812 (EN)**

Application

**EP 06850514 A 20061004**

Priority

US 2006038654 W 20061004

Abstract (en)

[origin: WO2008045031A2] Catalysis is used to reduce levels of radicals, other toxins, and carbon monoxide in cigarette smoke. The catalysis operates efficiently at temperatures typical of tobacco smoke, is formed from nontoxic materials, and is relatively inexpensive. The nanostructured catalyst contains titanium oxide, iron oxide, and calcium oxide. The catalyst comprises a layer of iron oxide in the  $\gamma$  form supported on a titanium oxide core. Addition of calcium cations helps to stabilize the iron oxide in the  $\gamma$  form. The iron oxide layer is on the order of a few nanometers thick on the surface of the titanium oxide core, in an "egg-in-shell" structure. The nanocatalyst is highly active in promoting the oxidation of compounds such as hydroquinone, catechol, other hydrocarbons, chlorinated phenols, semiquinone radicals, and carbon monoxide, at room temperature and higher temperatures. Catalysis remains active in a pyrolytic or combustion environment for extended periods of time, and has high redox cycling potential. The efficiency of catalysis is not strongly affected by coking in a pyrolytic or combustion environment.

IPC 8 full level

**A24D 3/16** (2006.01); **A24B 15/18** (2006.01); **A24D 3/02** (2006.01)

CPC (source: EP)

**A24B 15/28** (2013.01); **A24B 15/286** (2013.01); **A24B 15/287** (2013.01); **A24B 15/288** (2013.01); **A24D 1/002** (2013.01); **A24D 3/16** (2013.01)

Citation (search report)

See references of WO 2008045031A2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)

**WO 2008045031 A2 20080417**; **WO 2008045031 A3 20081030**; EP 2086361 A2 20090812

DOCDB simple family (application)

**US 2006038654 W 20061004**; EP 06850514 A 20061004