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Effect of support on V_2O_5 catalytic activity in chlorobenzene oxidation

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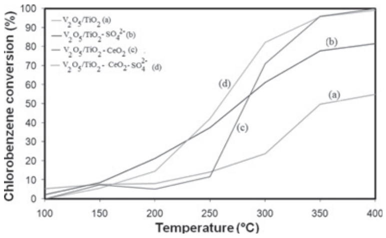
► TiO_2, $TiO_2–SO_4^{2−}$, $TiO_2–CeO_2$ and $TiO_2–SO_4^{2−}–CeO_2$ are prepared by sol gel route. ► Active vanadia is deposited on these aerogel supports by impregnation route. ► Vanadia based catalysts are tested in chlorobenzene oxidation. ► Cerium containing catalysts considerably improved catalytic properties at 400 °C. ► Sulfate containing samples improved catalytic properties in the range 200–300 °C.



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Metalloporphyrins as cytochrome P450 models for chlorhexidine metabolite prediction

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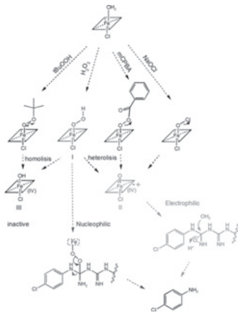
► Chlorhexidine (CHX) is prone to degradation in the presence of metalloporphyrins. ► *p*-Chloroaniline (pCA) is the main product from CHX catalytic degradation. ► The results show the strong possibility of pCA formation when CHX is ingested.



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Improving carbon retention in biomass conversion by alkylation of phenolics with small oxygenates

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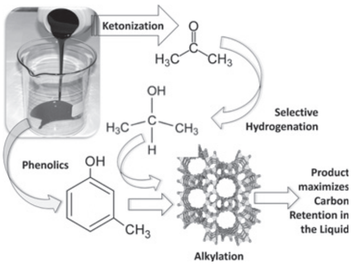
► Alkylation is an efficient method to retain C from small oxygenates in liquid fraction of bio-oil. ► m-Cresol alkylation activity follows the sequence 2-propanol > propylene > 1-propanol. ► A hydrogenation/alkylation two-stage process is proposed to utilize small aldehydes and ketones. ► The combination Pt–Fe/SiO_2 + H-beta was found to be effective for the two-stage process.



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Alloyed Ni-Fe nanoparticles as catalysts for NH_3 decomposition

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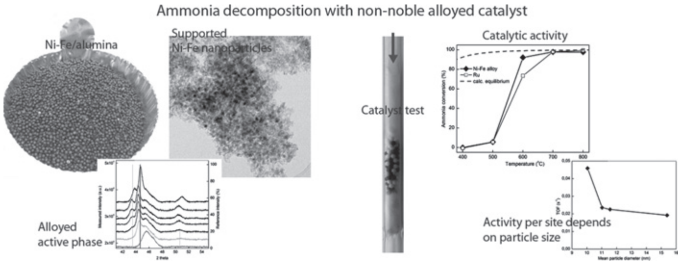

► Non-noble metal Ni-Fe alloy catalysts for NH_3 decomposition. ► Promising catalysts for high temperature NH_3 decomposition. ► Structural sensitivity: increasing activity for decreasing particle sizes. ► Of various support oxides: Al_2O_3-based support materials give the best performance.

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Deoxygenation of propionic acid on heteropoly acid and bifunctional metal-loaded heteropoly acid catalysts: Reaction pathways and turnover rates

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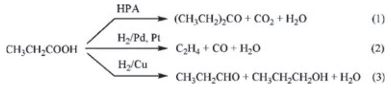

► Propionic acid deoxygenation studied at 250–400 °C in H_2 or N_2. ► HPA catalysed ketonisation to 3-pentanone at 250–300 °C in N_2. ► Pd and Pt decarbonylated propionic acid to ethene in H_2 but had no effect in N_2. ► C=O bond to yield propanal and 1-propanol. ► The turnover rate of propionic acid conversion follows the order: Pd > Pt > Cu.

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A comparative study of bulk and 3DOM-structured Co_3O_4, $Eu_{0.6}Sr_{0.4}FeO_3$, and $Co_3O_4/Eu_{0.6}Sr_{0.4}FeO_3$: Preparation, characterization, and catalytic activities for toluene combustion

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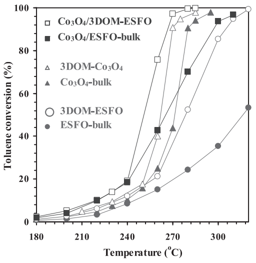

► 3DOM-structure and bulk Co_3O_4, $Eu_{0.6}Sr_{0.4}FeO_3$, and $Co_3O_4/Eu_{0.6}Sr_{0.4}FeO_3$ are prepared. ► Porous samples are higher than bulk samples in O_{ads} content and better reducibility. ► The porous samples exhibit higher catalytic performance than the bulk samples. ► There is a synergistic effect between Co_3O_4 and $Eu_{0.6}Sr_{0.4}FeO_3$. ► Catalytic activity is governed by O_{ads} content, reducibility, and synergistic action.

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New palladium catalysts on polyketone prepared through different smart methodologies and their use in the hydrogenation of cinnamaldehyde

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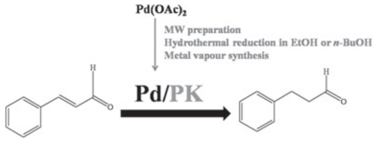

► Polyketone has been employed for the first time as support for Pd nanoparticles. ► Three different synthetic approaches were adopted. ► The hydrogenation of cinnamaldehyde to hydrocinnamaldehyde was studied. ► The catalysts showed high stability and recyclability. ► The performances are related to Pd nanoparticles morphology.