J Pet Environ Engineering 2015, 6:5
http://dx.doi.org/10.4172/2157-7463.C1.014

OMICS International
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Examining the impact of the pre-salt discovery on drilling fluids patent applications in Brazil

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With the discovery of the pre-salt reserves, the exploration of oil and gas is being extended to great depths in Brazil, thereby generating increasing demand for drilling capabilities. This study examines the impact of this discovery accomplished by Petróleo Brasileiro S.A. (Petrobras) on patent applications in Brazil associated with drilling fluid technologies. Then, this article provides empirical evidence that the pre-salt discovery significantly affected patent strategizing of Multi-Nationals Companies (MNCs) operating in the upstream oil and gas industry.

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Ni-boride-silica, Ni-Al hydrotalcite and Pd-MCM-41 catalyst synthesis, characterization and its application for oxidation and reduction reaction: An environmentally efficient approach

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Microporous and Mesoporous silica catalysts, MCM-41 derived from zeolite type catalysts are easily synthesized in lab scale and commercially available SiO_2 have applications in reduction reactions. Ni-B silica catalysts denoted as Cat A are characterized by XRD, IR, SEM, BET surface area and chemisorption studies. Nickel boride generated *in situ* on silica is found to be a super-active catalyst for reduction of nitro aromatics, aldehydes, ketones, alkenes, phenols and in reductive amination of aldehydes and ketones at low temperatures whereas Ni-SiO_2 Cat A and Pd-(II) MCM-41 denoted as Cat B exhibited catalytic activity for reduction of nitroaromatics, aldehdyes and hydrodehalogenation reactions. Ni-Al hydrotalcite is a solid base catalyst active for a variety of organic reactions i.e., oxidation of alcohols to carbonyl compounds and reduction of aldehydes to alcohols which exhibited as redox catalysts. From TPR characterization it is evident that Ni in association with oxide of aluminium is active oxidation of alcohols to carbonyl compounds in molecular oxygen. The IR, XRD, DTTGA characterization of Ni HT catalysts gave excellent results which confirms that Ni HT active catalysts for organic transformations. The catalysts showed reusability after the reaction. The efficient catalytic activity was exhibited for Ni-SiO_2, Ni HT and Pd catalysts for reduction reactions which are reusable, atom economy, reproducibility and environmentally friendly catalysts. Comparative study of Ni-SiO_2 and Pd (II) MCM-41 catalysts is presented in this article.

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