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BOOK OF SHORT ABSTRACTS

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ORAL SESSION - CHEMICALS AND MATERIALS

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Optimization of the Adsorption Process for the Analytical and Preparative Separation of Nadolol Stereoisomers

O-FP7

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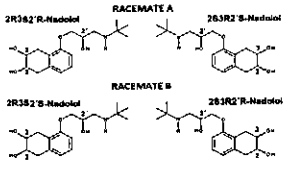


Molecular structures of the four nadolol stereoisomers

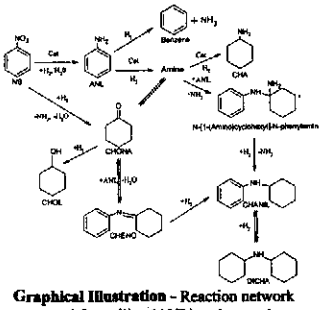
The screening of different solvents and solvents mixtures for the analytical and preparative separation of nadolol stereoisomers using two chiral stationary phases is presented.
The experimental results are analysed through different strategies of liquid chromatographic separation depending on the target compound to be separated from a quaternary chiral racemic mixture.

The wide range of present results can be very useful both for the analytical or preparative separation of nadolol in order to better characterize the pharmacological and therapeutical behaviour of all single stereoisomers of this beta-blocker pharmaceutical drug.

Hydrogenation of Nitrobenzene over Pd/Al_2O_3 catalyst – Mechanism and effect of the main operating conditions

O-FP8

C. Sá Couto[1,], L.M. Madeira[2], C.P. Nunes[1], P. Araújo[1]. (1) CUF – Químicos Industriais, S.A., Quinta da Indústria, 3860-680 Estarreja, Portugal. (2) LEPABE, Departamento de Engenharia Química, Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias s/n, 4200-465, Porto, Portugal. (3) CPQ/DEQ, Instituto Superior Técnico, Universidade de Lisboa, Av. Rovisco Pais, 1049-001 Lisboa, Portugal.; *clara.couto@cuf-qi.pt.*



Graphical Illustration – Reaction network proposed for aniline (ANL) and secondary products formation including benzene.

The catalytic hydrogenation of nitrobenzene was studied in a three-phase basket reactor. The catalyst used was a commercial 1 wt.% Pd/Al_2O_3 sample in spherical form and the samples collected during the experiments in the batch reactor were analysed by gas chromatography. The kinetic experiments allowed to better understand the mechanism behind aniline and secondary products formation, a topic not well understood and for which information available in the literature is scarce. The effect of temperature, pressure and nitrobenzene concentration were studied and it was found that there are more secondary products than those referred in the literature; in particular, the formation of benzene was elucidated. It was found that both the reaction kinetics and selectivity are strongly dependent on the temperature while the effect of total pressure is not that pronounced.

Heterogeneous Photocatalytic Synthesis of p-Anisaldehyde from p-Methoxytoluene in a Small Batch Reactor under UV-LED Irradiation

O-FP9

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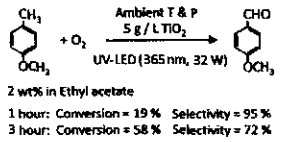

The small scale of batch reactor with the use of UV-LED lamp enabled heterogeneous photocatalytic synthesis of p-Anisaldehyde (P-MB) from p-Methoxytoluene with high productivity and high selectivity. Compared to the previous work in the literature, the generation rate (GR) of P-MB per power was 13-fold faster, while the GR of P-MB per power per volume was more than 1000-fold faster. The conversion, selectivity and irradiation time were 58%, 72% and 3 hours in this work, while 75%, 60% and 48 hours in the previous work. With a fixed flow rate of oxygen bubbling, the GR of P-MB increased with the UV intensity without significant decrease of selectivity. With a fixed UV intensity, on the other hand, the flow rate of oxygen bubbling did not affect the GR of P-MB and selectivity in the higher flow rate range.