ABSTRACTS OF PAPERS PRESENTED AT INTERNATIONAL CONFERENCES

NB: The abstracts of papers published in this magazine pertain to research projects conducted all over I.R. Iran and are not limited to the Sharif University of Technology. The Editor would be happy to include abstracts, in future editions, of all scientific papers presented by researchers throughout the country, with a view to keeping the academia and professionals informed about research activities carried out by Iranian scientists.

CATALYSIS ON RH & RU SUPPORTED ON RARE EARTH OXIDES *

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ABSTRACT - The catalytic conversion of CO and CH_3OH/H_2 are well known. The purpose of this work has been to investigate the effects of catalyst - support interactions on the activities and selectivities of Ru & Rh supported on the oxides of La, Ce, Pr, Sm, Eu, Ho and Yb in the above reactions.

The catalysts were prepared by the method of impregnation followed by drying and calcination at 773K. Catalyst loading of 0.5-3.5% were formed. the catalysts were tested in a micro - reactor on line with a Varian 1400 aerograph where pulses of reactant were introduced through its facilities while H_2 was the carrier gas. The catalysts were reduced at 673K and tested at 523K.

The total and metallic surface areas measured in situ were in the range of 3.5-15.0 and 0.8-9.0 sq m/g. Alkanes & alkenes of C_1 - C_6 were detected in the reactions. The activities and selectivities varied dramatically with the choice of supports. Yb

and to a lesser extent Ho formed mainly C_1, significant selectivity towards C_2 - C_6 were seen on others which peaked around C_3 - C_4 (excluding C_1) and Ru. being more selective. Typically, Ru/La/Co formed (40, 15, 20, 10, 8, 7) and Rh/La/CH_3OH formed (60, 10, 15, 10, 5, 0) for C_1 - C_6. Several activating pulses of CO were required probably to build up enough C deposits on the surface. The selectivity was dependent on the size of the CO pulses & were not influenced by catalysts redn-oxdn-redn cycles. No simple correlations were observed between the kinetics and the number of f-electrons of their relevant properties.

** - Presented at the 33rd IUPC congress, August 17 - 24, 1991, Budapest, Hungary.*

SYNTHESIS AND CHARACTERIZATION OF LINEAR ALIPHATIC UNSATURATED POLYESTERS' BASE ON CIS - 2 - BUTENE-1, 4-DIOL*

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ABSTRACT - A new hohnologous series of linear aliphatic polyesters, such as poly (cis- 2- butenylene carboxylate)s, PBms, (m, is the number of methylene groupd in the acide component, m=2-8) have been synthesized by direct polyesterifiction reactions in anisol, as solvent. FT-IR, 400 MHZ ^{1}H-NMR, ^{13}C-NMR and elemental analysis were used to establish the structure of polyesters. Molecular weight distributions were studied by GPC. the most narrow distributions were due to PB2 and PB8, and the number average molecular weight for all the polyesters, except PBC, was about 3000-4000. Thermal properties of polyesters were studied by TGA and DSC. TGA curves for all polyesters show similar patterns. PB8 is the most thermally stable polyester. The DSC heating curves for all polyesters show more or less similar patterns. T_m value changes follow an odd-even dependence on m, from PB2 to PB5, but from PB5 to PB8, T_m increases linearly. WAXS powder patterns show that polyesters, except PB3, are highly crystalline. An odd-even discrimination in WAXSpatterns is observed. Degree of crystalinity-m relationship has zigzag form, as polyester having even m has more DC.

** - Presented at the Fourth Asian Chemical Congress, August 26 - 30, 1991, Peking, china.*

ON THE EXISTENCE OF PERIODIC SOLUTION FOR CERTAIN NONLINEAR SECOND ORDER AUTONOMOUS DIFFERENTIAL EQUATIONS. *

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ABSTRACT - Periodic solutions of planar dynamical systems are very important in theory and application. The classic theorem of Poincarè-Bendixon gives a criterion for the detection of periodic solution in the plane, Due to limitation of this theorem any other criterion may be considered.

We have considered certain nonlinear second order autonomous differential equation and have proved the existence of a periodic solution.

** - Presented at the 5th International Conference on Scientific Computing, January 27 - 31, 1992, Benin, Nigeria.*

ZYLINDRICALLY SYMMETRIC THIN WALLS *

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ABSTRACT - The study of (2+1) - dimensional thin walls is now very common, this is partly because of the role domain walls may play in cosmology. Usually the authors are

used to handling the problem in the Gaus-Codazziformalism. The work of Geroch and Traschen encourages one to tackle the problem directly using distribution valued tensors. This has already been done successfully for plane- and spheri - symmetric thin walls. Here we report on the axialy symmetric case. Specifically we solve the Einstein equations for using distribution valued tensors. This has already been done successfully for plane - and spheri - symmetric thin walls. Here we report on the axially symmetric case. Specifically we solve the Einstein equations for an infinite zylindrically mass shell using a continuous metric having discontinuous derivatives. As a result we have found a new exact solution for the Einstein equations representing a thin infinite zylinder. Zylindrically symmetric cosmological domain wall is a special case of our solution.

* *Presented at the International conference on Gravitation and cosmology, December 13-18, 1991, Ahmed Abad, India.*

STUDIES ON L- GLUTAMIC ACID FERMENTATION USING IRANIAN BEET MOLASSES. *

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ABSTRACT - Glutamic acid accumulation in fermentation medium containing Iranian beet molasses by corynebacterium glutamicum ATCC (13032) was investigated.

The maximum concentration of glutamic acid present in fermentation medium containing 180 g/1 beet molasses was 78 g/1, this corresponds to a conversion of about 8.3% of sugar present in the medium. The effect of biotin, surfactant and oxygen transfer coefficient was studied, 42% increase in the production of L- glutamic acid was obtained by using 0.65 gl^{-1} of Tween 60. The most effective addition time of Tween 60 was at the logarithmic phase.

In order to investigate the influence of oxygen supply on the formation of glutamate, we have chnged the oxygen transfer coefficient ($K_L.a$) by variation of suitable agitation and aeration. The effect of air flow rate per unit volume of liquid ($^F/_V$) and revolution number (N) on oxygen transfer coefficient in sulfite solution are expressed by the empirical formula: $K_L.a = m \left(\frac{F}{V}\right)^b . N^c$ where m, b and c are constants of characteristics of fermenter.

* - *Presented at the Fourth World Congress of Chemical Engineering, June 16 - 21, 1991, Karlsruhe, Germany.*

TENSILE AND COMPRESSION STRENGTH OF POLYPROPYLENE FIBER REINFORCED CONCRETE *

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ABSTRACT - The experiments discussed in the present paper, have been performed on concrete specimens reinforced randomly with polypropelene fibers. To obtain the true properties of the fibers, their tensile stress - strain diagram has been obtained through tests. The fibers used had a tensile strength of 0.257 G_{pa} (2800 kgf/cm^2), a failure strain of about 11%, and a young modulus of elasticity of 25 G_{pa} 0, 0.5, 1.0, 1.5, 2.0 and 2.5 percent by volume of fibers have been tested in splitting tensile and compressive strength tests, and the tensile strength, maxtensile strain and compressive strength vs. percentage by volume of fibers diagrams have been plotted.

The results showed that the compressive strength did not change significantly, but the tensile strength had an increase of about 80%, and significant improvement in ductility was achieved. The tests also showed that the best improvement was obtained at an optimum percentage by volume of fibers of about 1.5%

* - *Presented at the International Symposium for Development in Fiber Reinforced Concrete and Ferrocement, November 11 - 21, 1991, U.S.A.*