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Sol-Gel Assisted Synthesis of Europium-Doped Hydroxyapatite Nanopowders

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Abstract

In this study, nanodimensional europium doped hydroxyapatite (Eu:HAP, $Ca_{10-x}Eu_x(PO_4)_6(OH)_2$, x= 0.15 and 0.2) powders have been synthesized by a water based sol-gel technique. A systematic investigation on the physico-chemical, structural and thermal behavior of as-synthesized nanopowders has been done using X-ray diffraction (XRD), transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FTIR), photoluminescence spectroscopy (PL) and thermogravimetric analysis (TGA).

Keywords: Europium, hydroxyapatite, nanodimensional, photoluminescence.

Impact of Human Capital on the Performance (Quality of Publications) of Research Institutes in India - An Empirical Study

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Abstract

The purpose of the paper is to see the impact of Knowledge, skills, Innovation & creative ability and human capital as a whole on the quality of publications in research institutions in India. The quality of publication is defined as number of SCI publications in last five years and Knowledge, skills, Innovative & Creative Ability and human capital is measured through a comprehensive research questionnaire on 5 point scale. The responses from 119 scientists across various research institutions were collected and analyzed using Structural Equation model. The results of the study show that Knowledge, skills and Innovative and creative capability and human capital as a whole have a positive significant impact on the quality of publications in India.

Key Words: Human Capital, Intellectual Capital, Knowledge, R&D, performance
JEL Classification: I23, O32, J24.

High Frequency Modelling of Distribution Transformer

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Abstract:

It is very important to develop an accurate high frequency model of a distribution transformer. It helps to improve the high frequency characteristics of the distribution transformer at designing stage. This work presents a simple procedure to obtain the high frequency model of a distribution transformer. A two-port network model of the distribution transformer has been developed using Z-parameters. The Z-parameters are very easy to be evaluated as only open circuit test is required for that. The high frequency equivalent circuit model of the distribution transformer has been developed using MATLAB Fast Fourier Transformations as a tool.

Keywords—high Frequency; model; distribution transformer; two-port network; z-parameter; open circuit test; fast Fourier transformations.

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Effect of OM Chanting on Memory Power of Polytechnic students - An Empirical Study

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Abstract

This paper focuses on the yogic technique which can enhance the short term memory power of Indian polytechnic engineering students. One hundred fifty students were selected from various Engineering streams. Thirty students were put in control group and one hundred twenty students were put in experimental group, who participated in a study on the effect of OM chanting on memory power. The study adopted a dual group pre-test/post-test design. All the participants were assessed through observing the words through reading and recalling the words by writing, to test their level of short term memory power. The participants were trained in to undergo listening of this OM chanting for a period of 31 days. Pre-test and post-test results were compared using t test. Obtained results show that the obtained t is significant showing that regular practice of listening to OM chanting improves concentration and hence Short Term Memory Power of the practitioners significantly. Therefore, its prolonged practice can enhance the long term memory power too.

Keywords: Polytechnic Engineering Students, Technical Education, Memory, Music therapy, Short term memory.

Techno-Economic Evaluation and Cost Benefit Analysis of Small Hydro Power Projects

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Abstract

Small Hydro-Power (SHP) technology was introduced in India shortly after the commissioning of the world's first hydroelectric installation at Appleton, USA in the year 1882. Results of a techno-economic feasibility evaluation of few Small-Hydro-Power Projects (SHPP) being planned and implemented for decentralized power supply for remote locations in India are presented. The capital cost of such projects (including cost of power evacuation and distribution system), cost per unit of rated capacity, and relative cost of different sub-systems of SHPP in the capacity range of 0.4MW–5MW have been analysed. Unit cost of delivered electricity for these SHP projects has been estimated.

Keywords: Small hydro-power plant; Cost–benefit analysis; Economic analysis; Unit cost of electricity; Distribution networks.

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Comparative Study of Varying Dosage of Different Plasticizers for Standard Concrete of Grades M35 & M40

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Abstract

This paper summarizes the experimental study that measures and compares the effect of using plasticizer admixture (of various brands) on properties of concrete. Different companies manufacture plasticizers with different ingredients and for different grades of concrete. Hence, an experimental investigation was conducted to study the effects of optimum dosage of these plasticizers (determined using Marsh Cone) on reducing w/c ratio. Concrete mixes with optimum dosages of the different plasticizers were prepared along with control mixes (i.e. without plasticizers) using both OPC and PPC. After casting the concrete samples underwent normal curing for 7 days and 28 days. Properties in both fresh state (workability) and hardened state (compressive strength, split tensile strength, flexural strength) were determined and compared. The results presented in this paper highlight the optimum dosages of the various plasticizers used, and the change in concrete properties in the fresh state.

Key Words: Plasticizer, Optimum Dosage, Workability, Compressive Strength, Split Tensile Strength, Flexural Strength.