# ABSTRACTS

## PROBLEM PREDICTION DURING TRIP IN AND TRIP OUT PROCEDURES WITH ARTIFICIAL NEURAL NETWORKS
(pages 71-77)

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*Keywords:* artificial neural networks, deep learning, drilling operation, trip in, trip out
*Abstract:* In recent times, the adaptation of artificial intelligence (AI) technologies has been spread in the petroleum industry. Such methods as Artificial Neural Networks (ANN), Fuzzy Logic, or Evolutionary Computing have the potential to improve the currently applied methods in every sector of the industry. They provide an advanced encroachment of the complex physics of downhole parameters, which directly add to their modeling ability compared to the traditional empirical and analytical methods. In this study, the development of a feed-forward neural network is presented. The purpose of the development is to predict the possible problems in case of a drilling operation, during running in and pulling out of the hole (RIH & POOH), based on the data acquired during the drilling of the hole.

## FRESH METHOD: 3D BIOPRINTING AS A NEW APPROACH FOR TISSUE AND ORGAN REGENERATION
(pages 79-82)

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*Keywords:* FRESH, bioprinting, hydrogel, 3D printing
*Abstract:* Over the last decade, techniques of additive manufacturing of biomaterials have undergone a transformation, from a fast prototype tool used in research and development, to a viable approach in the production of customised medical devices. The key to this transformation is the ability of additive manufacturing to precisely define the structure and properties of a material in three dimensions, and to adjust those properties to unique anatomical and physiological criteria based on the medical data obtained by Computed Tomography (CT) and Magnetic Resonance Imaging (MRI).

The 3D bioprinting technique was developed as a solution to provide temporary and ubiquitous support of structures during the printing process. In general, integrated 3D printing may be understood as a building chamber that is filled with bearing materials, where biomaterials, cellular spheroids, cell-laden hydrogels and other materials (bioinks) are deposited using a syringe-based extruder. In particular, FRESH 3D bioprinting is a revolutionary technology, which may bring a fast and efficient advancement to medicine thanks to the ability to print new tissues from live cells.

# EFFICIENCY MODEL FOR THE PROLIFERATION OF SECONDARY MARKET SUPPLY CHAIN – WITH REFERENCE TO THE INDIAN GARMENT CLUSTER
(pages 83-92)

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*Keywords:* secondary market, reverse supply chain, retail garment business, supply chain performance, supply chain practices
*Abstract:* The growth of secondary market in retail garment trade has been a major boost to economic growth in developing nations. This paper highlights the importance of effective forward and reverse supply chain the garment sector as driver for this booming secondary market. A conclusive research technique has been adapted to study the supply chain practices followed in the garment business those in the primary and secondary market. Structural equation modelling is used to validate and test the proposed model for supply chain performance. Cluster sampling method was incorporated. Owners of garment manufacturing firms in and around Coimbatore, Tirupur, Salem, Bargur and Bengaluru region would form the respondent group. A structured questionnaire was given to them to understand their supply chain practices, supply chain flow velocity and flow efficiency and its impact on their business performance. The firms operating under uncertain circumstances in the secondary supply line have adopted practices which lead to appropriate velocity and efficient flow of money, material and information which has been proved through the testing of the model. The velocity and efficiency in the supply line has improved the performance thereby ensuring a more sustainable business for the firm operating in the secondary markets. This study has contributed in understanding the various dimensions of best supply chain practices and its effect on the flow velocity and flow efficiency of the money, material, and information in the secondary market garment supply chain. An assessment of the results of the study has opened a window to the operations of the secondary garment supply chain line in the Indian cloth market which have been more or less camouflaged under the primary market operations. The outcome of the research also shows that these secondary market players have evolved their own strategies to sustain in volatile and uncertain circumstances. These strategies have proved to be very effective in minimizing wastage and increasing profitability of the manufacturing firms. The implications of this study is bound to give much needed support and leverage to the frail and underperforming secondary garment cluster which is a major contributor of Gross Domestic Product and employment ratio.

# DESIGN AND ANALYSIS OF A PAPER SHREDDER MACHINE
(pages 93-97)

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*Keywords:* shredder machine, design, cutting blade, CATIA
*Abstract:* A paper shredder machine is a device that can shred documents such as paper and plastic into small strips or shreds. Private companies use it to shred confidential private documents or other sensitive documents into small strips or rubble. Thus, these machines help secure information effectively and waste to the environment. The article offers an alternative to the design and calculation of a shredder model. In addition, the options for optimizing the cutting blade and evaluating the strength of machine parts are also discussed to ensure the reasonable of the model. The analysis results are carried out with CATIA software. The results can serve as a prerequisite for an optimal model of the shredder that will go into series production in the future.

# CATALYST PROCESSING AND RECYCLING
(pages 99-104)

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*Keywords:* statistics, auto catalyst, environment, precious metals
*Abstract:* Discussed auto catalysts contain interesting quantities of platinum noble metals, palladium and rhodium according to the type of auto catalyst, thereby becoming a possible source of these metal aims to acquaint themselves with catalysts in general, their history and last but not least the possibilities of processing and obtaining noble metals for further use. The article deals with knowledge at the theoretical level of use of methods in processing depleted catalysts. It is pyrometallurgical and hydrometallurgical methods. The platinum group metals (PGMs) palladium, platinum, and rhodium represent the key materials for automotive exhaust gas treatment. Since there are currently no adequate alternatives, the importance of these metals for the automotive industry is steadily rising. The high value of PGMs in spent catalysts justifies their recycling. The state-of the-art technology is to melt the ceramic carrier and collect the precious fraction in a liquid metal bath. As the feed material has quite high melting points, huge amounts of energy are required for this process. Hydrometallurgical treatments of the spent catalysts offer the possibility to recycle the PGMs with less energy and time demands. Moreover, automotive catalysts contain further valuable materials to improve the exhaust gas treatment. These compounds, like cerium oxide, cannot be recovered in pyrometallurgical processes.