

1st Research Symposium 2016

Abstract Handbook



RCC 2016





- PB-1 **Ultra-Sensitive Optical Sensor Using Plasmonic Nanoparticles;** *A. EL Rashidi*
- An ultra-sensitive optical Nano-sensor using plasmonic Nano-particles of different metallic materials such as gold, silver, copper and vanadium dioxide is introduced in this paper. The surface Plasmon resonance of plasmonic material is depending on the refractive index of surrounding medium such as generic organic polymer where the refractive index is changing according to gas concentration in contact with its surface. Refractive index sensitivity and half width full maximum of the optical incident wave for different metallic nanoparticles is simulated using FDTD method. HWFM and refractive index sensitivity are compared for different refractive indexes of single and two different sizes of different metals plasmonic nanoparticles. Maximum refractive index sensitivity, 580 nm/RIU, is obtained using two different size gold nanoparticles by using the proposed structure.
- PB-2 **Shoreline Extraction from LiDAR DEM Data and Aerial Image;** *A. Yousef, K. M. Iftekharuddin AND M. Karim*
- Shoreline is a spatial varying separation between water and land. Several data sources such as: historical land-based photographs, coastal maps and charts, aerial images, beach surveys, multispectral/hyper spectral images, LiDAR DEM data and microwave sensors can be used to extract the shoreline locations. In this work [1], we develop two novel algorithms that can effectively extract shorelines depending on the available data sources.
- The first algorithm is a multi-step morphological technique that can work on LiDAR DEM with respect to a tidal datum while the second depends on the availability of training data to extract shorelines from LiDAR DEM fused on aerial images. We perform Monte Carlo simulations to estimate the confidence interval for the error in shoreline position. Compared with other relevant techniques in literature, the proposed methods offer better accuracy in shoreline extraction.
- PB-3 **Economic Advantages of utilizing the integrated quality software development model ;** *M. Kanan, G. Weheba , R. Assaf*
- NA
- PB-4 **Moisture Diffusion and Permeability Characteristics of Hydroxypropylmethylcellulose and Hard Gelatin Capsules;** *A. S. Barham*
- Dry Powder Inhaler (DPI) products typically consist of a device containing a blend of micron-sized drug particles and larger inert carrier particles, which is usually lactose (1). Capsules are frequently used with DPI devices to store the powder blend. Spray dried lactose is very hygroscopic and has a tendency to gain or lose moisture with ease. Since amorphous lactose can crystallise spontaneously above a 50% RH at room temperature, there must be questions concerning the physic-chemical composition of DPI-lactose, both when supplied, during formulation and product life cycle.
- PB-5 **Electropolymerization of 4-hydroxybenzyl alcohol at various pH values;** *A. S. Barham*
- The electrochemistry of the related compound 4-hydroxybenzyl alcohol (4HBA) has not been studied in aqueous solutions. The behaviour of 4HBA in basic methanol solutions has been studied by Pham *et al.*,¹ and they demonstrated that the electrochemical oxidation of 4HBA leads

to the deposition of polymers films on the electrode surface. The observed behaviour is often quite complex and demonstrates a dependence on various factors such as pH.

- PB-6 **Intelligent Based Control Method for a Two-Mass Rotary Positioning Systems;**
A. Aji Wijaya and M. Fitri Mohd Yakub

Precision positioning of multi mass systems are widely used in industrial applications, such as advanced manufacturing systems, CNC machining, and robotic systems.

Basically, a point-to-point (PTP) control system is a positioning system that is used to target an object to a predefined location that is required to have a fast response speed, high degree of position, and high positioning accuracy. A Nominal characteristic trajectory following (NCTF) control design approach is straightforward, adjustable, and easy to implement; and a mathematical model of the system and its parameter identification are not required, because these controllers depend only on a simple open-loop response of the system.

- PB-7 **ECG Signal Transmissions Performance over Wearable Wireless Sensor Networks;**
D. Eid, A. Yousef, And A. Elrashidi

Sudden death is the most common disease of heart diseases and usually caused by cardiac arrest. The electrocardiograph (ECG) system is the most direct way to observe and monitor health status of the heart. In this kind of disease, the patient may need continuous monitoring, and sometimes is kept in Intensive Care Unit (ICU), which needs more utilities and manpower that will eventually leads to increase the cost and demands for qualified medical staff. In this paper we introduce a comprehensive real time monitoring ECG system for continuous monitoring patients inside/outside home. Wearable Wireless Sensor Network with a cluster head is connected to patient body for monitoring. Measured data by WWSS are transmitted via cluster head to an internet connection to the monitoring system located on the hospital. In case of emergency, the measured data is sent to the physician's cell phone for any necessary actions. We discuss the inside/outside system structure. Additionally, we analyze the proposed system in terms of power consumptions and optimum distance between WSN sensors.

- PB-8 **Techno-Economic Study on PV/BB/UG Hybrid System;** *E. A. El-Sayed, A. Elrashidi, and M. Alhadad*

Hybrid PV/battery bank/ utility grid system (PV/BB/UG) is considered as a basic solution for any shortage of fuel resources on a worldwide. This paper introduces a complete study of the performance of a hybrid PV/BB/UG system. The cost of kilo Watt of each individual source has been calculated and the kWh cost of the overall PV/BB/UG is calculated as well taking into consideration the installation and running cost. The introduced system is simulating the real load of a building in University of Business and Technology located in Dahban-Jeddah, Saudi Arabia. The optimal power management is carrying out using the designed program which has been trained and tested using actual data and under different operation conditions. Matlab-Simulink is used for carrying out a simulation using daily data of the load demand, insolation and temperature of Jeddah site, KSA.

- PB-9 **Improvement of Healthcare Systems Using Lean Six Sigma Concepts in Saudi Hospitals;**
R. Assaf, M. Kanan

Lean Six Sigma concepts gained a lot of attention in the healthcare systems. Lean thinking originally (and historically) was applied in Japanese production systems. If developed correctly, it would result in waste reduction in all aspects of the system leading to reduction in cost and an increase in profitability.

In few words Lean Manufacturing is an established managerial philosophy with a proven track

record in industry. [1]

On the other hand, Six Sigma philosophies have the ability to improve the system from the customer's point of view and affect the performance of the hospitals.

PB-10

An Image based method for rendering overlay text detection and extraction using transition MAP and INPAINT; *M.Shajahan*

An efficient image based method of overlay text brings important semantic clues in video content analysis such as video information retrieval and summarization, since the content of the scene or the editor's intention can be well represented by using inserted text. overlay text extraction for video optical character Recognition (OCR) becomes more challenging, compared to the text extraction for tasks of document images, due to the numerous difficulties resulting from complex background, unknown text color, size and soon. This proposed system solves the overlay text detection, OCR process. For overlay text detection transition map is used. For OCR process font matching is used. The main aim of the research is to propose a novel framework to extract the overlay text information in video frames. This method produces better than the previous methods. Resultant accuracy is highly improved.

PB-11

Assessment Of Quality Costs In Saudi Arabia Manufacturing Industry; *H.Redha*

Quality costs are those resulting from producing, identifying, repairing, and avoiding defective products. The following four categories are used to define and quantify manufacturing quality costs: First, internal failure costs which refers to these costs incurred prior to the products delivery to the customer. They include costs resulting from scrap, rework, retest, downtime, yield losses or disposition. Second, external failure costs which refers to these costs occurring after the products are delivered to the customer. They include categories such as complaint adjustment, returned products, warranty charges, and liability or allowances concessions.

PB-12

Reducing evaporation from large fresh water reservoirs in Saudi Arabia using Mono layers NANO technology; *M. Daoud*

Monolayers will be used to cover standing water sources, such as dams and lakes by means to reduce the loss of water by reducing the evaporation rate. Laboratory experiments will be carried out to identify and quantify the desired monolayer compounds (long chain fatty alcohols, especially 1-hexadecanol (cetyl alcohol) and 1-octadecanol (stearyl alcohol) to understand the mechanism by which monolayers reduce water evaporation in terms of evaporation suppression.

PB-13

Modified Health Care Controlling System Using Advanced Smart Pill and Finger Ring; *S. A. Abouamer, And M.I.Youssef*

Home health care is a hot research field in the 21 century. It can reduce the risky and critical cases that may happen to elder and disabled patients. It also improves life quality of patients in their familiar environment. On the other hand, home health care will reduce the medical expense. With the help of the sophisticated communication techniques, widespread applied computers and microcomputers, and micro electro- mechanical systems, as sensing elements and actuators, home health care network has become a reality. Many researches went for excellent applicable results that are used nowadays in many hospitals. These hospitals are equipped with what is called "hospital monitoring centre", which receives a 24 hours precise measured data from the patients at their home directly. In this paper, a modified Smart Pill (SP) and a finger ring are used to complete health care controlling systems. The complete system is very important in situation when the patients are in an uncontrolled state. The block-diagram of the already existing health care system and the block-diagram of the modified health care system will be shown. Patients and elder people swallow these pills every day and live normally. In case of emergency when they are disabled, doctors in the hospital or centers while monitoring them can sent a coded

signal that is received by the pill to release the precise amount of required medicine for the case. This step saves the time up to 30 minutes (according to European Standards) of sending the care ambulatory team to the patient location.

PB-14

Novel Passive Radio Frequency Identification System; S. Bali; A. Elrashidi; T. Kaiser

Radio Frequency Identification (RFID) is a wireless technology that allows small and cheap chips to be used in remote sensing and interrogation in order to exchange identification and location information between a reader and tags. It is supposed to ultimately replace the widely used optical barcode technology for solving logistical as well as large data handling challenges. It enables solutions for managing high numbers of goods while maintaining flexibility and ease of use.

The idea of this project has been motivated in June 2013, and the project is planned to continue until November 2017. The launching of this project was supported by DAAD since a study visit was granted for the primary investigator to spend three months in the institute of digital signal processing (DSV) at University of Duisburg-Essen (UDE) in the period between 01.06.2013 and 31.08.2013, In which research work planning was done.

PB-15

Modeling van der Waals interaction water molecules and biological channels; H.Garalleh

We examine the van derwaals interactions between water molecules with both water channels, aquaporin-z (AQPZ) and glycerol channel (GLPF). Here we model these problems using classic AL applied mathematics and obtain the potential energy for a water molecule interacting with the channels which we assume in both cases to have a flaired right cylindrical geometry. we model a water molecule as comprising two parts: firstly, as a single point representing the location of the oxygen atom, and a spherical shell over which we assume a uniform distribution of the two hydrogenatoms. Our results indicate the spontaneous acceptance of water molecules into these channels.

PB-16

Quantum dots sensitized solar cells ; M.Alkhatib, M.Zunic,H.Abuhimid,M. Dosari, E.Traversa, J-P Vilcot, E.Dogheche , B.Elzein

Being clean, abundant and renewable, Solar energy is very promising in renewable energy conversion process. This research is about 3rd generation solar cells, using zero and one dimensional nanostructures. The objectives are the following:

- Develop a third generation solar cell
- Increase the conversion efficiency
- Develop an eco-green flexible Solar cell
- Decrease the manufacturing cost

PB-17

The impact of variation orders on a project progress in the Saudi hospitals construction industry; Case studies; J. Al Suliman

Variation orders play a crucial function in the success or failure of delivering the construction projects. Baxendale and Schofield (1986) define variation orders simply as any change that can occur to the basis which is different than the agreed and signed contract. In fact, it has been argued by Revay (2002) that there will certainly be variation orders in each single construction project in its lifecycle to design, time, cost and quality, in most of these phases, if no tall. The construction in dusty therefore is subject to poor performance due to related to design and construction quality that may cause the occurrence of variation orders which leads to time delay and cost over runs (wongetal, 2007). This study focuses on the impact and influences of change orders in construction projects in a specific period, i.e. the construction phase. The study is also limited in context to the kingdom of Saudi Arabia. Moreover, this research is restricted to a case

study comparing two hospital projects: Skaka Hospital and Baljurashi Hospital.

PB-18

Synthesis and characterization of Star-Shaped Poly(Ester-Amide) using Bifunctional coupling agent with Oxazinone group; *M. Garaleh*

Different Star Shaped Poly (Ester-Amide) were prepared via three steps procedure as showed in Schemes 1 and 2. In the first step, Various poly (E-Caprolactone)s PCL with different molar masses were synthesized by ring- opening polymerization of E-Caprolatone with different Diols(scheme1). In the second step Star-Shaped PCL terminated with OH End-groups was functionalized with coupling agent (1) containing oxazine group (scheme1) and finally functionalized Star-Shaped PCL were allowed to react with polydiamine to produce star-shaped poly(Ester-Amide)s (Scheme2). In this poster we present evidences, in the form of polymer end group analysis by H NMR spectroscopy, whereby the chemical structure and the feed ratios were approved.