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PROCEEDINGS OF "CONFERENCE ON RECENT ADVANCES IN BIOMATERIALS DEC 17-18 '10"

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"Conference on Recent Advances in Biomaterials Dec 17-18 '10"
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SCOPE OF THE CONFERENCE

"The conference will provide a platform for discussing current advancements and future trends in biomaterials for medical and pharmaceutical applications. Through the synergistic approach of applied chemistry and physics, material science, electronics, mechanical engineering, biochemistry and medicine, this Conference on biomaterials includes how the deeper insight into biological events and its interplay with nanotechnology may support the development of a generation of novel materials, micro-nano-devices and molecular level approaches suited to solve relevant biomedical problems both for therapy and diagnostics. The conference will provide an excellent opportunity to meet and forge collaboration with large number of experts with diverse specializations including engineering, basic sciences, medical and dental professionals, etc. For the research scholars and students, CRAB 2010 will be an eye opener and an excellent opportunity to meet experts from various institutions in India and abroad."

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Saveetha School of Engineering, Saveetha University, Thandalam, Chennai-602 105
Ph:9282500599, Ph:9846152346, Email ID: principal.sse@saveetha.com

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THEME 5
CHARACTERIZATION AND SYNTHESIS OF BIOMATERIALS

Abstract id:2

EXPERIMENTAL STUDY FOR IMPROVING ADHESION PROPERTY OF NANOSTRUCTURED ALUMINA COMPOSITE THINFILM AS COATINGS OVER STEEL

S. Anand, S.S. Divya, P. Venugopalan, Joseph Joly, Murthy Chavali

Department of Nanotechnology, Noorul Islam Centre for Higher Education (NICHE), Noorul Islam University, Kumaracoil, Thuckalay – 629 180, Kanyakumari district, Tamilnadu, India, Email: anand.s.thampy@hotmail.com

Al2O3 and Al2O3/SiC nanocomposite were prepared by sol–gel processing. The process involved the precipitation of Al(NO3)3.9H2O with NH4OH for synthesizing Al2O3 nanoparticles .Sodium Silicate gel prepared by using precipitation method from rice husk ash. Al2O3 and Al2O3/SiC nanocomposite coated as thinfilm layer over steel by using spin coating method. Here sodium silicate will improve the adhesion property of the nanostructured alumina composite thinfilm as coatings over steel.

Keywords: Al2O3 and Al2O3/SiC nanocomposite

Abstract id:16

SYNTHESIS AND CHARACTERISATION OF ZNO NANOCRYSTAL

S. Berbeth Mary, J. Jayasudha Dr. Leo Rajesh

M.A.M College, Thanjavore, Tamilnadu, INDIA

Certain semiconductor materials continue to be a focus of research in materials science due to their unique electronic and optical properties and extensive applications. Among these materials, wide and direct band gap semiconductors are of great interest for blue and ultra – violet optical devices such as light emitting diodes and laser diodes. Zinc oxide, as a typical wide and direct band gap (3.37ev) semiconductor with a large exition binding energy (60meV) is a potential candidate for such applications. In the present work, ZnO nanocrystals were synthesized by conventional method where zinc acetate as the precursor. The major advantage is the use of water as the solvent; cheaper and more environmentally friendly than alcohol. The synthesised ZnO nanocrystal had been characterized by X-Ray diffraction (XRD), Scanning Electron Microscopy (SEM), Fourier Transmission Infrared Spectroscopy (FTIR) and UV. The average grain size and the band gap were found out.

Keywords: Spectroscopy, ZnO nanocrystal

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Abstract id:25

STUDIES ON OXIDE ADDED NACL-KCL CRYSTALS

M.Priya,C.K.Mahadevan

VelTech Multech
Dr.Rangarajan Sakunthala Engineering College, Avadi, Chennai-600062

Alkali halide mixed crystals have created considerable interest and curiosity and have motivated a large number of investigations. Attempts have been made to use these crystals for optical information storage devices. The alkali halide solid solutions exhibit a phase separation just below the freezing point. These phases show very low solid solubility of one in the other. Alkali halide activated with impurities was studied in the past with a goal to obtain new materials with technological applications. In particular, alkali halide single systems doped with Eu^{2+} ions and other divalent impurity ions increase their optical conversion from ultra violet to visible light due to a high efficiency radiation less energy transfer process.
We have carried out studies on oxide added alkali halide mixed crystals which form a part of the studies made on ternary and binary mixed crystals by us. Polycrystals of pure and ZnO and CdO added (separately) NaCl, KCl and $(NaCl)_{0.5}(KCl)_{0.5}$ were prepared by using the melt method. The prepared crystals were characterized by making density, metal atom content, lattice variation, dielectric constant, dielectric loss factor, AC and DC electrical conductivities, etc. Measurements. The studies done illustrate that though miscibility problem is there, the systems yield a new class of stable materials. Details will be presented.

Keywords: NaCl, KCl and $(NaCl)_{0.5}(KCl)_{0.5}$

Abstract id:28

RRS FILTER BASED ARCHITECTURE FOR NOISE ELIMINATION IN ASYNCHRONOUS DATA TRANSMISSION

Ramesh Babu. V, Rajesh Kumar. G

Swarnandhra College of Engineering & Technology

This paper describes architecture for Noise elimination in Asynchronous Data Transfer. UARTs are used for asynchronous serial data communication between remote embedded systems. If physical channel is noisy then, serial data bits get corrupted during transmission. Here, we described an architecture which utilizes recursive running sum filter to remove noisy samples. Input data signal is directly sampled with system clock and samples are accumulated over a window size. The window size is user programmable and it should be set to one third of required bit period. The intermediate data bit is decoded using magnitude comparator. A majority voter is used to decode actual data bit from three intermediate data bits. Comparison of ISE simulation results at different noise level shows that the technique described here has far better performance than standard data transfer technique at higher noise levels. Other advantage of this architecture is that baud rate is decided by the window size so there is no need of any external “timer module” which is normally required for standard UARTs. The Data transfer scheme described here is designed using VHDL.

Keywords: UARTs., VHDL

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Abstract id:29

NANO CRYSTALLINE DOUBLY DOPED TIN OXIDE FILMS DEPOSITED USING A SIMPLIFIED AND LOW-COST SPRAY TECHNIQUE FOR SOLAR CELL APPLICATIONS

R. Rathi[1], K. Ravichandran[2], K. Saravanakumar[2], G. Muruganantham[2], L. Chinnappa[3] and B. Sakthivel[2]

[1]Department of Physics, Sengamala Thayaar Educational Trust Women's College, Mannargudi, Thanjavur- 614 001, India.

[2]Post Graduate and Research Department of Physics, A.V.V.M. Sri Pushpam College (Autonomous), Poondi -613 503, Thanjavur, Tamil Nadu, South India.

[3]Post Graduate and Research Department of Physics Rajah Serfoji Government College, (Autonomous), Thanjavur - 613 005, Tamil Nadu, South India

A simplified and low-cost spray technique using perfume atomizer is employed for the fabrication of antimony + fluorine doped tin oxide films (SnO_2: Sb: F) from aqueous solutions of $SnCl_2$ precursor. The structural studies showed that the films are nano crystalline with preferential growth along the (101) plane. It is found that the grain size of the films increases from 32 nm for undoped film to 71 nm for doubly doped films. The SEM images depict that the films are homogeneous and uniform. The optical transmittance in the visible range is 80 % and the optical band gap is 3.6 eV. The sheet resistance is found to be minimum (4.75 Ω/□) for the doubly doped film, for which doping levels of Sb and F are 2 and 30 at. % respectively. This value is lesser than that reported by many researchers for F or Sb doped tin oxide films by employing different version of spray pyrolysis technique. These films fabricated by this simplified technique have desirable figure of merit (1.36×10^{-2} [Ω/□]$^{-1}$) comparable with their conventional spray counterparts. Hence this simplified and inexpensive spray technique may be considered as an economic alternative to the conventional spay method for the mass production of solar cell TCO layers and transparent electrodes for opto-electronic devices.

Key Words: Tin oxide, doubly doping, low resistivity

Abstract id:30

ENERGY EFFICIENT ARCHITECTURES FOR THE LIFTING BASED 2D DISCRETE WAVELET TRANSFORM

S.Rosaline,

Vels Srinivasa College of Engineering & Technology

In this paper, we propose energy efficient single-processor and fully pipelined architectures that performs 3-level, 2D lifting-based DWT on a (5, 3) filter. The architecture involves single processor that performs both row and column wise processing simultaneously providing higher hardware utilization. In the fully pipelined architecture the three single processors are organized in pipelined fashion to perform the 3-level transform with significant reduction in memory and increase in throughput thereby saving both area and power consumption. The proposed architecture is best suitable for real-time image/video applications in battery-operated portable systems. The architecture is simulated in VHDL environment, and then synthesized with Xilinx.

Key Words: Xilinx, VHDL

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Abstract id:33

SYNTHESIS AND CHARACTERIZATION OF ZNO NANOBARS USING A SOFT CHEMICAL METHOD

K. Saravanakumar*, K. Ravichandran and B. Sakthivel

Department of Physics, A.V.V.M. Sri Pushpam College (Autonomous), Poondi -613 503, Thanjavur, Tamil Nadu, South India

Zinc oxide (ZnO) is one of the most versatile materials with broad applications in many fields like medicines, opto-electronics, ceramics, pigments, and rubber additives. They are also used in LEDs, photocatalysts and bio-sensors. In the present study, ZnO nanopowders (ZnO-NPs) were synthesized using a soft chemical route and their structural and surface morphological characteristics for various pH values of the precursor solutions were studied. The X-ray diffraction profile showed that the ZnO-NPs have the hexagonal wurtzite structure (JCPDS No 36-1451). The (101) plane was found to has the strongest peak for all the NPs prepared from starting solutions having different pH values. The second and third peaks were also quite similar to the standard reference indicating that the synthesized NPs were pure ZnO. The SEM images depicted that the crystallites of the NPs have nanobar structures with diameter in the range of 75- 90 nm.

Key Words: Zinc oxide, nano powder, X-ray diffraction

Abstract id:35

FABRICATION AND CHARACTERIZATION OF NANOCRYSTALLINE CDS FILMS BY CBD AND SILAR TECHNIQUES - A COMPARATIVE STUDY

V. Senthamil Selvi, K. Ravichandran and B. Sakthivel,

Department of Physics, Kundavai Naachiyaar Government College for Women (Autonomous) Thanjavur - 613 007, Tamil Nadu

Nanocrystalline cadmium sulphide (CdS) films were deposited on glass substrates by employing two different soft chemical methods viz. Chemical bath deposition (CBD) and successive ionic layer adsorption and reaction (SILAR) and their structural, optical and surface morphological properties are studied and compared. The X-ray diffraction patterns of the films revealed that the preferential orientation is along the (002) plane. It is found that as the molar concentration of the source precursors for cadmium and sulphur increases, the crystalline quality of the film enhances. The SEM images showed that the surface of the films have good packing density and homogeneity. The optical band gap is found to be in the range of 2.3 – 2.5 eV. The characteristics of both the films are found to be suitable for solar cells and other opto-electronic devices.

Key Words: CdS, soft chemical method, X-ray diffraction, optical studies

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Abstract id:36

SYNTHESIS AND SPECTRAL CHARACTERIZATION OF ACETOPHENONE THIOSEMICARBAZONE-A NONLINEAR OPTICAL MATERIAL. R.

Santhakumari,K. Ramamurthi,G. Vasuki,

Govt. Arts College for Women, Pudukkottai
Bharathidasan University, Truchirappalli
K. N College of Arts and Science, Thanjavur

Acetophenone thiosemicarbazone (APTSC) was synthesized. Solubility of APTSC was determined in ethanol and methanol at different temperatures. Single crystals were grown from ethanol by slow evaporation at room temperature. The grown crystal was subjected to FT-IR, Laser-Raman and 1H NMR spectral analyses to confirm the synthesized compound. Thermal properties were investigated by thermogravimetric and differential thermal analyses. High resolution X-ray diffractometry (HRXRD) was employed to evaluate the perfection of the grown crystal. The range and percentage of optical transmission was ascertained by recording UV-vis-NIR spectrum. The third order nonlinear optical parameters (nonlinear refractive index and nonlinear absorption coefficient) were derived by the Z-scan technique.

Abstract id:40

SYNTHESIS AND CHARACTERIZATION OF MN-DOPED ZNO NANOPARTICLES BY SIMPLE CHEMICAL METHOD

S.Udayakumar, V.Renuka & K.Kavitha

Kings College of engineering Thanjavur,
National college Tiruchirapalli,
STET Women's college, Mannargudi.

ZnO is a wide band gap semiconductor (_3.37 eV),which has a large excitant binding energy (_60 meV).Theoretical works predict that ZnO doped with transition metal (TM) elements, will exhibit optical properties at room temperature . Therefore, transition metal doping of ZnO is of great interest for potential spintronic applications. While there have been numerous studies on transition metal-doped ZnO films and single crystals, the studies on fabrication and characterization of transition metal-doped ZnO nanostructures have been scarce. For both nanostructured ZnO and ZnO thin films, the reported optical and thermal properties appear to be highly dependent on the material preparation conditions. One serious problem in the growth of transition metal nanostructures is the achievement of uniform and reproducible dopant concentration. In this work, we explore the possibility of fabricating Mn2+-doped ZnO nanorods have been synthesized via a chemical precipitation method utilizing optimum dopant concentration 2% and polyvinyl pyrolidone (pvp) as capping agent . The structure of nanoparticles has been analysed by FTIR, X-Ray diffraction (XRD) ,transition electron microscopy (TEM) and photoluminescence spectrum (PL) and thermal studies by TGA - DTA analysis.

Key Words: chemical precipitation method, nanorodes, polyvinyl pyrolidone etc…

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Abstract id:43

CONVERSION OF CHITIN TO CHITOSAN THROUGH MICROWAVE PROCESSING AND THE STUDY OF PROCESS PARAMETERS ON DEGREE OF DEACETYLATION

Abhinaya C[a],, Harshnidevi S[a], Mahalakshmi S[a], Navaneetha Krishnan P[a],Suraj N[a],Siddharthan A[a]

[a]*Department of Mechanical engineering, College of Engineering, Guindy, Anna University Chennai, India-600025*

Chitosan owing to its immunostimulatory activities, anticoagulant properties, antibacterial and anti-fungal actions was used in biomedical applications such as wound-healing dressing material (artificial skin), digestible sutures, support for bio sensors, novel carrier material in contolled drug delivery systems, etc. Chitosan was obtained from chitin by the process of deacetylation through alkali treatment. This process involves the removal of acetyl groups from the molecular chain of chitin resulting in the chitosan with complete amino group. The chitin was deacetylated by mixing it with sodium hydroxide and further heated by microwave processing. For comparison conventional heating was followed for the deacetylation. The degree of deacetylation (DD) i.e. the average number of D-glucosamine units per 100 monomers expressed as a percentage was measured for the resulted chitosan using Fourier transfer Infrared spectroscopy. The microwave process was carried out by varying the weight percent of NaOH, microwave power and the processing time. The DD% was calculated for all the samples. It was found that the DD% that is obtained using higher weight percent of NaOH with longer processing time in conventional heating process can be attained in shorter interval and with less weight percent of NaOH by microwave processing.

Key Words: D-glucosamine, deacetylation, NaOH

Abstract id:94

POLYMERIZATION SHRINKAGE OF DENTAL RESTORATIVE RESINS

Sudhakar Benjamin .s, Dr.C.V.Subba Rao

Saveetha School of engg, Saveetha university

Dental resins have been used in dentistry for more than ten decades. In restorative dentistry, synthetic resins are used in variety of dental applications dental resins are used for restoration and replacement of tooth structure . these resins can be bonded directly to tooth structure and other restorative material.
In conservative dentistry, the resin is used for anterior and posterior restoration for esthetic reason.The main disadvantage in resin restoration, is polymerization shrinkage which may lead to percolation, discoloration, hypersensitivity.. Introduction of nano technology in composite resin has been claimed to reduce polymerization shrinkage. Further research in physical, chemical and biological properties may be needed to enable the clinician to achieve high percentage of success with resin restorations.

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Abstract id:84

BONDING AGENTS AND ADVANCEMENTS

Dr. Ramya

Saveetha Dental College and hospitals, Saveetha University

Mechanics of bonding has opened a new door in prosthodontics leading to “adhesive prosthodontics”. Previously prosthesis were held in place by luting cements that acted as physical and mechanical agents that filled the space and aided in retention. Bonding agents are used for bonding composites to tooth structure, for desensitization of exposed dentin and for bonding porcelain veneers. There are various systems of bonding agents and this paper aims at the advances made in “bonding technology”.

Abstract id:83

EVALUATION OF BIOMATERIALS IN ORTHODONTIC BONDING

C. Raghavan, Prof. Dr. Shyamala Chandrasekhar

Department of Orthodontics, Saveetha Dental College and hospitals, Saveetha University

Bonding of orthodontic attachments using orthodontic adhesives is one of the most important procedures in clinical orthodontic practice and is the most significant development over the past three decades. For good orthodontic results, there should be adequate bond strength between the tooth surface and the bracket. And it should also be easily removable once the treatment terminates, with minimal damage to the enamel surface. The basic steps involved in orthodontic bonding are 1. Enamel cleaning, 2. Enamel conditioning, 3. Sealing, and 4. Bonding.
An ideal orthodontic adhesive should have properties such as adequate shear and tensile bond strength, must be biocompatible, and reduce chair side time for the clinician.
There are various materials which have evolved during the past few decades to make the bonding of brackets to the tooth surface easier for the clinician. Advances have also been made to bond the orthodontic brackets to unconventional surfaces like ceramic and amalgam. Many studies have also been conducted to study these properties of the bonding adhesives. These studies have been conducted both in vivo and in vitro using instruments, equipements and techniques based on engineering principles.
Advances are being continually made in the biomaterials used in orthodontic bonding to achieve an ideal orthodontic bonding material and also to make the work of the orthodontist easier.
This paper focuses on the different techniques and instruments used for testing the different properties of orthodontic bonding materials.

Abstract Id:129

BIOGLASS AND ITS APPLICATION IN DENTISTRY

Dr. Saptarishi bannerji

Saptarishi bannerji Saveetha Dental College and Hospital, Saveetha University, Chennai-77

The use of bioglass has revolutionized the concept of grafting in dentistry. This paper looks into the property development and application of bioglass in the field of dentistry.

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Abstract id:77

SYNTHESIS AND DIELECTRIC PROPERTIES OF HYDROXYAPATITE (HA) / MANGANESE OXIDE (MNO_2) NANOCOMPOSITE FIBERS BY ELECTROSPINNING

G. Nixon Samuel Vijayakumar[a,b], M. Rathnakumari[b] , P.Sureshkumar[c*]

[a]*Department of Physics, R.M.K.Engineering College, Kavaraipettai -601206, India.*
[b]*Materials Research Centre, Department of Physics, Velammal Engineering College, Chennai – 600 066, TN, India.*
[c]*Department of Physics, Saveetha School of Engineering, Saveetha University, Thandalam, Chennai- 602105, India, Email: suresrath@yahoo.com*

Hydroxyapatite (HA) is a bio-material used for fabricating artificial bones and medical implants. Nanocomposite fibers of hydroxyapatite (HA) / manganese oxide (MnO2) were fabricated by electrospinning the sol synthesized by using the sol-gel process and subsequently calcining these fibers above 1000oC. Scanning Electron Microscope (SEM) images revealed the diameters of the fibers to be between 100 – 200 nm and porous in nature. The sample was characterized by Powder X-ray Diffraction (XRD) and Ultraviolet–Visible–near-Infrared Spectroscopy (UV–vis–NIR). Powder XRD confirmed the presence of hydroxyapatite (HA) / manganese oxide (MnO2) phases. Dielectric studies were performed on the nanocomposite to understand the behavior of the material under the application of electromagnetic fields helping in fast healing of bone fractures.

Keywords: Sol-gel process, Electrospinning, Bio ceramic material, SEM, UV, dielectric study.

Abstract id:66

IN VITRO EVALUATION OF BOND STRENGTH OF SEALER MIXED WITH ANTIBIOTIC

Dr.V.Keerthi, Dr.C.V.Subbarao

Saveetha Dental College and hospitals, Saveetha University

It has been reported in literature regarding the combination of sealer and antibiotic which was found to be useful in eliminating bacteria in root canal infections.
AH-Plus, an epoxy resin based sealer was tried in combination with amoxicillin in-vitro studies. Amoxicillin which is a penicillin derived antibiotic has been proved to eliminate E.Faecalis, an anaerobic bacteria responsible for retreatment cases. There is not much documentary evidence to prove the bond strength of sealer-antibiotic combination. Therefore, the present study has been undertaken to evaluate the adhesive property of AH-Plus in combination with amoxicillin which may be useful for the prolonged effect in retreatment cases. Mechanics of bonding has opened a new door in prosthodontics leading to “adhesive prosthodontics”. Previously prosthesis were held in place by luting cements that acted as physical and mechanical agents that filled the space and aided in retention. Bonding agents are used for bonding composites to tooth structure, for desensitization of exposed dentin and for bonding porcelain veneers. There are various systems of bonding agents and this paper aims at the advances made in “bonding technology”.

Keywords: E.Faecalis, AH-Plus

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Abstract id:65

IN VITRO EVALUATION OF BOND STRENGTH OF AH-PLUS MIXED WITH AMOXICILLIN

Dr.V.Keerthi, Dr.C.V.Subbarao

Saveetha Dental College and hospitals, Saveetha University

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There is not much documentary evidence to prove the bond strength of sealer-antibiotic combination. Therefore, the present study has been undertaken to evaluate the adhesive property of AH-Plus in combination with amoxicillin which may be useful for the prolonged effect in retreatment cases.

Keywords: E.Faecalis

Abstract id:60

CALORIMETRIC ANALYSIS OF GELATINE-GLYCOSAMINOGLYCANS COMPOSITES

Ivy Kanungo, N Nishad Fathima* and J Raghava Rao

Chemical Laboratory, Central Leather Research Institute, Council of Scientific and Industrial Research, Adyar, Chennai 600020, India

The objective of the present study is to investigate the factors responsible for tuning the calorimetric properties of microporous gelatine-GAGs based composites, which were further modified by a natural crosslinker genipin. The melting temperature (Tm), enthalpy change (ΔHm) and heat capacity change (ΔCp) were calculated. The activation energy of the composite systems is found to be strongly influenced with the change of the formulation of the composite system. The activation energy is found to decrease with increase in GAGs concentration. Thermoporometry, Circular Dichroism spectroscopy study (CD), Scanning Electron microscopy (SEM) results suggests that the concentration of the glycosaminoglycans plays an important role in the pore size distribution and the structural features of the composite matrices. The results provide new insights into the thermal stability of composite and suggest potential strategies for its manipulation.

Keywords: crosslinker genipin, Thermoporometry, glycosaminoglycans

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Abstract id:58

"ADVANCEMENT IN IMPRESSION BIOMATERIALS AND TECHNOLOGIES"

Dr.Ashish.R.Jain

Saveetha Dental College, Saveetha University P.G

Major Advances In Impression Biomaterials And Technologies Have Occurred During The Last Decade, With Greater Emphasis Being Placed On Nanomaterials. In Prosthodontics, Impression Materials Are Used To Record Intraoral Structures For The Fabrication Of Definitive Restorations.The Accuracy Of These Final Restorations Is Highly Dependent On The Impression Materials And Techniques Utilized.This Paper Highlights The Various Advancements In Impression Biomaterials And Technologies As These Influence The Success Of Prosthesis In Terms Of Accuracy Of Fit & Functional Efficiency.

Keywords: Prosthodontics, Impression, Final Restorations

Abstract id:48

REVASCULARISING BIO-MATERIALS IN PIN-HOLE SURGERIES

Balaji.K*,
(PG) Department of anatomy, Saveetha medical college, Chennai-602 105, India, Email: balaji_srmc@yahoo.com
Department of Prosthodontics and Implantology, College of Dental Surgery, Saveetha University, Chennai-77

Over yonks, interventional methods such as angioplasty, stenting and catheter based drug delivery has substantially improved the outcome for patients with vascular diseases. The use of bio-materials such as catheter, guide wire and therapeutically devices like stents, grafts and its combinations has been a life saving and show stopper in interventional medicine. In procedure, after puncturing the femoral artery, a guide wire-catheter combination is advanced under fluoroscopic guidance through the arterial network to the target locations (brain, heart, abdomen) the various therapeutic devices (stents, balloon) can be deployed and treatment can be delivered. The application of these bio-materials on vascular diseases and its significance on pin-hole surgeries will be discussed.

Key Words: yonks, stenting, angioplasty

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Abstract id: 97

SYNTHESIS, CHARACTERIZATION AND COMPUTATIONAL SIMULATIONS OF INORGANIC MATERIALS AND BIOMATERIALS

Arumugam Mahesh

Department of Physics, Saveetha School of Engineering, Saveetha University, Chennai- 602 105

The research activity is focused on the study of inorganic materials belonging to the family of advanced ceramics, in particular bioactive glasses and glass ceramics. The biomaterials synthesised by the route of sol-gel routes and are used to obtain different morphologies and microstructures (mesoporous) of the materials. The characterization structure and properties of the materials are investigated by means of a combined experimental and computational approach. The principal experimental techniques (UvVis, FTIR, NMR, EPR spectroscopy, AFM, SEM, TEM microscopy, XRD, etc…) are used for structure characterization; thermal (DTA, DSC and TG), mechanical (hardness and elastic modulus) and biological (invitro and invivo biocompatibility and bioactivity) properties are determined. Molecular mechanics (MM) and molecular dynamics (MD) simulations are utilized for (a) deciphering the local features around individual ions, (b) helping the understanding of glass properties, and (c) obtaining quantitative structural properties relationships to be used for the design of new material with improved desired characteristics. From the experimental results developed a new algorithms and codes. The theoretical study of crystal and amorphous structures were studied by molecular mechanics and molecular dynamics simulations.

Key Words: invitro and invivo biocompatibility; bioactivity; biomaterials; FTIR, NMR, EPR

Abstract ID: 109

STRUCTURAL, MECHANICAL AND OPTICAL CHARACTERISATION OF AN ORGANIC, INORGANIC AND A SEMI ORGANIC NLO MATERIALS

G.Anuradha

Department of Physics, Saveetha School of Engineering, Saveetha University, Chennai, Email: anu.ariyacheri@gmail.com

Organic NLO materials are generally more versatile than their inorganic counterparts due to their moré favorable nonlinear response since, these are often formed by weak Vanderwaals and hydrogen bonds and hence possess a high degree of delocalization. Some of the other advantages of organic compounds apart from the inherent increased non linearity include amenability for synthesis, scope for introducing desirable characteristics by multifunctional substitution, higher resistance to optical damage and so on. A semi organic material in which high optical nonlinearity of a purely organic material is combined with the favorable mechanical and thermal properties of an inorganic material.

In the present paper, an organic LAO crystal, an inorganic Potassium Sulphate crystal and a semiorganic LAP crystal are grown as single crystals by slow evaporation technique at room temperature and they are characterized by Fourier Transform Infrared Red (FTIR) analysis , X-ray diffraction analysis (XRD), UV, Micro hardness and thermal analysis like TGA, DTA and DSC measurements. The results are discussed.

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Abstract id:115

MULTI DOCUMENT TEXT SUMMARIZATION TECHNIQUES

R. Nedunchelian[1] and R. Muthucumarasamy[2], E. Saranathan[3]

[1]Saveetha School of Engineering, Saveetha University, Email: chelian1959@gmail.com
[2]Sri Venkateswara College of Engineering
[3]Sastra University, Thanjavur

A frequently used multi document summarization system with user interaction is proposed that would extract a summary from frequently used documents based on the document cluster centroids, which is effectively the distribution of terms in the multiple documents in the cluster. This summarization technique is a cluster-based, extractive summarization method, where passages are first selected based on the times they are visited, then clustered based on similarity, prior to the selection of passages that form the extractive summary of the documents. The implementation is based on the MEAD extraction algorithm and redundancy based algorithm. MEAD extraction algorithm uses three features to compute the salience of the sentence. They are Centroid value, Positional value and First-sentence overlap. Redundancy algorithm then checks for overlapping words in sentences and issues a redundancy penalty. The frequently surfed documents are taken for processing and Timestamp are issued to sentences to maintain the chronological order of the sentences and hence a coherent and free-flowing summary can be generated.

Key Words: Organic, Semiorganic, XRD, FTIR, Micro hardness, TGA, DTA, DSC

Abstract id:117

EVALUATION OF BIOMATERIALS IN ORTHODONTIC BONDING

S.D.Sekar[1], M.Santhanakumar[2], A.B.K.Rajan[3]

[1]Department of Mechanical Engineering, Saveetha Engineering College, Chennai, India
[2]Department of Mechanical Engineering, Saveetha Engineering College, Chennai, India
[3]Department of Mechanical Engineering, Appollo Engineering College, Chennai, India
Email: sekarsdmech@yahoo.co.in, msanthanakumar@gmail.com , abkrajan@gmail.com

Diesel Engine is one of the most efficient and versatile prime movers. Development has been made for the usage of diesel engine in automobiles, as diesel engines are more efficient than gasoline engines. But the unpleasant odour and emissions in the exhaust are the main drawbacks.
Stringent emission regulations paved way for the reduction of harmful exhaust emissions such as HC, NOx and PM in diesel engine. The present work involves the usage of metal salt solution as additive in diesel fuel. The sodium present in metal salt solution will act as catalyst in reduction of NOx.
The experimental setup consists of a four stroke air cooled, Direct injection diesel engine coupled to an electrical dynamometer. NOx analyzer was used to measure NOx and Smoke density meter was used to measure smoke. Two separate fuel tanks are used, one for diesel and the other one for sodium acetate as additive with diesel. A two way valve was used to choose the fuel mode.

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Abstract id:118

STRUCTURAL CHARACTERISTICS OF NANO CRYSTALINE COBALT SULPHIDE THIN FILM

D. Santhi
Shanthi, STET

Assistant Professor in Physics, STET (W) College, Mannargudi, Email ID: vvpriya84@gmail.com

The term Nano Technology is employed to describe the creation and exploitation of materials with structural features in between those atoms and bulk materials, with at least one dimension in the nano meter range. Nano particles often have unexpected visual properties because they are small enough to confine their electrons and produce quantum effect.
The Spray Pyrolysis method is best proven method for thin film preparation. The conventional method suffers serious of drawbacks like efficiency, grain size, surface smoothness and crack formation. In the present work, home built R.T. model of spray pyrolysis is used to prepare nano crystalline thin films.
The films formed by R.T. method have good surface uniformity. Solution wastage is reduced and 90% of the precursor solution is used for deposition. By controlling the solution drop size the grain size of the material in the film can be controlled. This helps for the production of films having nano level grain size crystals.
The main parts of the experimental setup are stainless steel heating pan maintained at constant temperature using thermostat, compressed air reservoir, solution reservoir (usually a beaker) and spray gun. It has two inlets, one is connected to the compressed air reservoir and the other is connected to the solution reservoir. The diameter of the spray gun is 0.0425 cm. The pressure of air is measured with a pressure gauge. An electric heater with thermostat is used to heat the substrate. The temperature of the substrate is measured with thermocouple. Here the solution is sprayed inside bulb and mist like particles alone allowed going out. The bulb is surrounded by hot bath.
The general term for non crystalline solids with compositions comparable to the crystalline ceramics is glass. Most common glasses are silicates with ordinary window glass being approximately 72% silica (SiO2) by weight, with the balance of the material being primarily sodium oxide (Na2O) and calcium oxide (CaO). Glass shares the property of brittleness with crystalline ceramics.

Abstract Id:125

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G.Anuradha

Department of Physics, Saveetha School of Engineering, Saveetha University, Chennai, Email: anu.ariyacheri@gmail.com

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Keywords: Organic, Semiorganic, XRD, FTIR, Micro hardness, TGA, DTA, DSC

Abstract Id:126

"ADVANCEMENT IN IMPRESSION BIOMATERIALS AND TECHNOLOGIES"

Dr.Ashish.R.Jain

Saveetha Dental College, Saveetha University P.G

Major advances in impression biomaterials and technologies have occurred during the last decade, with greater emphasis being placed on Nanomaterials. In prosthodontics, impression materials are Used to record intraoral structures for the fabrication of definitive restorations.The accuracy of these final restorations is highly dependent on the impression materials and techniques utilized.This paper highlights the various advancements in impression biomaterials and technologies as these influence the success of prosthesis in terms of accuracy of fit & functional efficiency.

Abstract id:117

REDUCTION OF NOX IN DI DIESEL ENGINE USING METAL SALT SOLUTION

S.D. Sekar[1], M. Santhanakumar[2], A.B.K. Rajan[3]

[1]Department of Mechanical Engineering, Saveetha Engineering College, Chennai, India.
[2]Department of Mechanical Engineering, Saveetha Engineering College, Chennai, India.
[3]Department of Mechanical Engineering, Appollo Engineering College, Chennai, India.
Email: sekarsdmech@yahoo.co.in, msanthanakumar@gmail.com , abkrajan@gmail.com

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