Review

901 Ayurvedic Bhasma: the most ancient application of nanomedicine

In practice of Ayurveda, herbo-mineral/metalllic formulations (Bhasma of metals and minerals) are used since 7th centuries. It was supposed that these medicines have superior level of efficacy in comparison to other Ayurvedic dosage forms. Several studies claimed that Bhasmas are biologically produced nanoparticles.

Prasanta Kumar Sarkar & Anand Kumar Chaudhary

Management & Information Technology

906 Simulation and evaluation of a straight-bladed Darrieus-type cross flow marine turbine

This study presents numerical simulations of a cross-flow vertical-axis marine current turbine (straight-bladed Darrieus type) with particular emphasis on rotor-performance prediction and hydrodynamic characteristics. A physical transient-rotor-stator model with a sliding mesh technique was used to capture change in flow field at a particular time step. A shear stress-transport k-ω turbulence model was used to model turbulent features of the flow. Developed model can effectively predict hydrodynamic performance of a vertical-axis marine current turbine.

S Lain & C Osorio
Management & Information Technology

913  Numerical simulation of aluminum bar casting for wire rod production

In a continuous casting of wire rod production, a cast bar, which is formed in a rotating wheel mould, is subsequently rolled by a set of rolls to form wire rod. Temperature of cast bar predicted by model has been verified by actual temperature measurement during casting at different operating conditions. Simulation results show the influence of various operating parameters on temperature distribution of cast bar.

S P Mohapatra, S K Sahoo, S Nanda, P Hembram, A Palchaudhary & S C Patnaik

919  Extending tool-life through jerk-limited motion dynamics in machining processes: An experimental study

This paper analyzes jerk repercussion in tool life under an experimental study on a retrofitted CNC lathe, where a trochoidal geometry is machined. Results show an up to 60% tool-life improvement and 50% of surface roughness reduction when jerk-limited motion dynamics on machining process are utilized.

J R Rivera-Guillen, R J Romero-Troncoso, R A Osornio-Rios, A Garcia-Perez & I Torres-Pacheco

926  Solving an economic production lot size problem with multi-delivery policy and quality assurance using an algebraic approach

This paper studies an economic production lot size problem with multi-delivery policy and quality assurance using an algebraic approach for practitioner, who may not have enough knowledge of differential calculus, to understand such an integrated production-shipment system. A recent study examined same problem using mathematical modeling and differential calculus to derive optimal replenishment lot size.

Yuan-Shyi Peter Chiu, Kuang-Ku Chen & Huei-Hsin Chang
Management & Information Technology

930 Model-based iterative feedback tuning for industrial PID controllers

This paper proposes a model-based iterative feedback tuning over a pseudolinear closed loop output error model basis. Its effectiveness is proven in an industrial level-control system.

M Milosawlewitsch-Aliaga, R A Osornio-Rios & R J Romero-Troncoso

937 A novel software architecture for smart metering systems

For smart metering systems (SMSs), this study presents a novel architecture, which allows simple, secure and fast integration of SMSs with other software products. Proposed architecture that combines better features of two models [Common Information Model (CIM) and OPC’s Unified Architecture (UA)] has proven in practice as a good basis for a commercial Meter Data Management System.

Srdan Vukmirovic, Aleksandar Erdeljan, Imre Lendak & Darko Čapko

S & T and Industrial Research

942 Molecular and biochemical characterization of extracellular tannin acyl hydrolase activity from a Mexican isolate of Aspergillus niger

Microbial tannase, a hydrolysable tannin-degrading enzyme, is extensively used in manufacture of instant tea, beer, wine, and gallic acid. Aspergillus niger strain, obtained from a Mexican tannery wastewaters rich in gallic acid [Quebracho Phenolics-rich Tannery Wastewaters, (QPTW)], displayed a good growth and tannase activity in a minimal medium added with 1% (w/v) QPTW (Kp= 0.451 mm.h⁻¹). Using PCR and RACE 3’ and 5’ methodologies, a complete cDNA of a tannase was cloned from this isolate. A. niger-GTO is a new strain with interesting characteristics for industrial tannase production purposes.

Fabiola León-Galván, Irineo Torres-Pacheco, Fernando Jiménez-Espinosa, Sergio Romero-Gómez, Lorenzo Guevara-Olvera, Ana Paulina Barba de la Rosa, Mario M González-Chavira & Ramón Gerardo Guevara-González
### S & T and Industrial Research

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>948</td>
<td>Potential of thermophilic bacteria as microbial inoculant for commercial scale white button mushroom ((\text{Agaricus bisporus})) compost production</td>
<td>Thermophilic bacteria (9), isolated from button mushroom ((\text{Agaricus bisporus})) compost samples, were evaluated for temperature requirement, extracellular lignocellulolytic enzymes activity assay and potential for white button mushroom compost production. Optimum growth in different bacteria was between 43-55°C. Highest activity of exoglucanase and endoglucanase was recorded in \text{Staphylococcus} sp., while that of (\beta)-glucosidase in \text{Bacillus brevis} and \text{B. megaterium}, and xylanase as well as laccase in \text{B. stearothermophilus}. \text{Staphylococcus} sp. also exhibited second best activity of xylanase. Compost prepared with \text{Staphylococcus} sp. exhibited highest colony forming units of bacteria, numbers of mushroom pinheads and mushroom yield. Thus \text{Staphylococcus} sp. has potential to convert agro wastes into selective and productive compost for white button mushroom cultivation.</td>
</tr>
<tr>
<td>956</td>
<td>Formulation and quality assessment of instant \textit{dhokla} mix with incorporation of pumpkin flour</td>
<td>This study presents an instant \textit{dhokla} mix with incorporation of pumpkin ((\text{Cucurbita moschata})) flour at 10, 20 and 30% levels in instant mix. Incorporation of pumpkin powder in instant \textit{dhokla} mix resulted in a significant increase in nutrients (threefold increase in protein and twofold increase in fiber). Beta-carotene levels of \textit{dhokla} mix increased by 8.4% in 20% pumpkin flour incorporated \textit{dhokla} mix when compared to standard.</td>
</tr>
<tr>
<td>961</td>
<td>A new approach for jute industry to produce fancy blended yarn for upholstery</td>
<td>This study presents a new approach to make jute based yarn by blending polypropylene in jute (30:70) in jute finisher drawing. Fabric has been made in specially modified handloom. Developed fabric showed higher area density, thickness, and weft crimp, tenacity and rigidity and it was cheap than commercial fabric. It was dimensionally and quality wise stable after wash, and showed no visible deterioration or deformation including surface texture, when used as table cloth and bed cover for two months.</td>
</tr>
</tbody>
</table>

**O P Ahlawat & B Vijay**

**Usha Ravi, Lakshmi Menon & M Anupama**

**Surajit Sengupta & Sanjoy Debnath**
Energy and Environment

966 Forced convection flat plate solar air heaters with and without thermal storage

This paper presents thermal performance of flat plate solar air heater (SAH) with and without thermal storages. A forced convection solar collector (FCSC) integrated with different sensible heat storage material has been developed and tested for its performance for solar collector under meteorological conditions of Aliyar, Pollachi Taulk, India. System consists of a flat plate SAH with heat storage unit, and a centrifugal blower to increase collector outlet temperature and efficiency (10-20%). Gravel with iron scraps gives better efficiency than other storage materials. FCSC is more suitable for drying high quality dried product even in a cloudy climate like Pollachi.

P T Saravanakumar & K Mayilsamy

Author-Reader Platform

969 Annual Author Index 2010
974 Annual Keyword Index 2010
981 List of Referees
983 Instructions to contributors
Author Index

Ahlawat O P  948  Menon L  956
Anupama M  956  Milosawlewitsch-Aliaga M  930
Barba de la Rosa A P  942  Mohapatra S P  913
Čapko D  937  Nanda S  913
Chang H H  926  Osorio C  906
Chaudhary A K  901  Osorio-Rios R A  919, 930
Chen K K  926  Palchaudhary A  913
Chiu Y S P  926  Patnaik S C  913
Debnath S  961  Ravi Usha  956
Erdeljan A  937  Rivera-Guillen J R  919
García-Perez A  919  Romero-Gómez S  942
González-Chavira M M  942  Romero-Troncoso R J  919, 930
Guevara-González R G  942  Sahoo S K  913
Guevara-olvera L  942  Saravanakumar P T  966
Hembram P  913  Sarkar P K  901
Jiménez-Espinoza F  942  Sengupta S  961
Lain S  906  Torres-Pacheco I  919, 942
Lendak I  937  Djokhla  956
León-Galván F  942  Vijay B  948
Mayilsamy K  966  Vukmirovic S  937

Keyword Index

*Agaricus bisporus*  948  Modeling  930
Algebraic approach  926  Motion dynamics  919
*Aspergillus niger*  942  Multiple deliveries  926
Bacteria  948  Nanocrystal  901
Bengal gram flour  956  Nanoparticles  901
Bhasma  901  Numerical simulation Turbulence model  906
cDNA cloning  942  OPC Unified Architecture (UA)  937
Closed loop output error model  930  PID controller  930
Common Information Model (CIM)  937  Polypropylene  961
Compost  948  Preferential blending  961
Continuous casting  913  Pumpkin flour  956
Djokhla  956
Economic production lot size  926  Ready to eat food  956
Extracellular lignocellulolytic enzyme activity  948  Replenishment policy  926
Fabric  961  Rework  926
Finite elements method  913  Scrap  926
Flank wear  919  Sensible heat  966
Flat plate solar air heater  966  Simulation  913
Guanajuato isolate  942  Smart metering  937
Herbo-metallic  901  Solidification  913
Herbo-mineral  901  Tannase  942
Home textiles  961  Temperature distribution  913
Hydrodynamics  906  Thermal storage  966
Industrial process  930  Tool life  919
Iterative feedback tuning  930  Vertical axis water turbine  906
Jerk  919  White button mushroom  948
Jute  961  Yarn  961

*J Sci Ind Res, 69* (12) 2010