

Viewpoint

Pavlovian Materials—Functional Biomimetics Inspired by Classical Conditioning

Light Robots: Bridging the Gap between Microrobotics and Photomechanics in Soft Materials

Shedding frequency in cavitation erosion evolution tracking

Biomimetic hemo-compatible surfaces of polyurethane by grafting copolymer brushes of poly(ethylene glycol) and poly(phosphorylcholine methacrylate)

Transfer printing of metallic microstructures on adhesion-promoting hydrogel substrates

Dimension reduction and decomposition using causal graph and qualitative analysis for aircraft concept design optimization

Employing Knowledge on Causal Relationship to Assist Multidisciplinary Design Optimization

Operating point dependent variable switching point predictive current control for PMSM drives

An Artificial Nocturnal Flower via Humidity-Gated Photoactuation in Liquid Crystal Networks

Do properties of bioactive glasses exhibit mixed alkali behavior?

Co-electrospun blends of PU and PEG as potential biocompatible scaffolds for small-diameter vascular tissue engineering

Bioactive glass ions induce efficient osteogenic differentiation of human adipose stem cells encapsulated in gellan gum and collagen type I hydrogels

Erosive-abrasive wear behavior of carbide-free bainitic and boron steels compared in simulated field conditions

Low temperature afterglow from  $\text{SrAl}_2\text{O}_4$   
Eu, Dy, B containing glass

Effects of adiabatic heating estimated from tensile tests with continuous heating

Impact wear and mechanical behavior of steels at subzero temperatures

Conjugated Heat Transfer Simulation of a Fin-and-Tube Heat Exchanger

Fin-and-tube heat exchanger enhancement with a combined herringbone and vortex generator design

Deposition of dry particles on a fin-and-tube heat exchanger by a coupled soft-sphere DEM and CFD

Effect of pre-treatments on barrier properties of layers applied by atomic layer deposition onto polymer-coated substrates

High performance natural rubber composites with a hierarchical reinforcement structure of carbon nanotube modified natural fibers

Optimised selection of new protective coatings for biofuel boiler applications

Elevated and cryogenic temperature micropillar compression of magnesium–niobium multilayer films

Real-time and Robust Collaborative Robot Motion Control with Microsoft Kinect ® v2

Superhydrophobic Coatings on Cellulose-Based Materials  
Fabrication, Properties, and Applications

Nanoparticle deposition on packaging materials by the liquid flame spray

Ultrafast Processing of Hierarchical Nanotexture for a Transparent Superamphiphobic Coating with Extremely Low Roll-Off Angle and High Impalement Pressure

On the threshold based neuronal spike detection, and an objective criterion for setting the threshold

Optimizing ammonium adsorption on natural zeolite for wastewaters with high loads of ammonium and solids

Fluorine losses in  $\text{Er}^{3+}$  oxyfluoride phosphate glasses and glass-ceramics

Analysing traffic fluency from bus data

Solvothermal synthesis derived Co-Ga codoped ZnO diluted magnetic degenerated semiconductor nanocrystals

Effect of air gap on the adhesion of PET layer on cardboard substrate in extrusion coating

Effect of polyolefin molecular structure on product properties in extrusion coating

Recurrence network analysis of wide band oscillations of local field potentials from the primary motor cortex reveals rich dynamics.

Highly conducting polychloroprene composites based on multi-walled carbon nanotubes and 1-butyl 3-methyl imidazolium bis(trifluoromethylsulphonyl)imide

Dynamic speckle analysis with smoothed intensity-based activity maps

Digital image correlation study of the deformation and functioning of the human heart during open-heart surgery

Experimental and numerical study of wall layer development in a tribocharged fluidized bed

Introducing Multi-Convexity in Path Constrained Trajectory Optimization for Mobile Manipulators

Hyperspectral phase imaging based on denoising in complex-valued eigensubspace

Towards dependable automation

Consideration of energy consumption, energy costs, and space occupancy in Finnish daycare centres and school buildings

Impact of building usage and occupancy on energy consumption in Finnish daycare and school buildings

Measured energy consumption of educational buildings in a Finnish city

Effect of energy measures on the values of energy efficiency indicators in Finnish daycare and school buildings

Synchronous Full-Field Strain and Temperature Measurement in Tensile Tests at Low, Intermediate and High Strain Rates

An exploratory study on strengthening and thermal stability of magnetron sputtered W nanoparticles at the interface of Cu/Ni multilayer films

Tailoring Second-Harmonic Emission from (111)-GaAs Nanoantennas

Mechanically Switchable Elastomeric Microfibrillar Adhesive Surfaces for Transfer Printing

Barkhausen Noise Probes and Modelling  
A Review

Assessing population vulnerability towards summer energy poverty  
Case studies of Madrid and London

Enhanced resonant nonlinear absorption and optical limiting in  $\text{Er}^{3+}$  ions doped multicomponent tellurite glasses

An origami inspired reconfigurable spiral antenna

Assessment of pitting corrosion in bare and passivated (wet  $\text{scCO}_2$ -induced patination and chemical passivation) hot-dip galvanized steel samples with SVET, FTIR, and SEM (EDS)

Transparent microelectrode arrays fabricated by ion beam assisted deposition for neuronal cell in vitro recordings

Direct model predictive power control of a series-connected modular rectifier

Materials for electronics by thermal spraying

Persistent luminescent borosilicate glasses using direct particles doping method

The role of niobium in improving toughness and corrosion resistance of high speed steel laser hardfacings

Multiresonant High-Q Plasmonic Metasurfaces

Effect of Multiple Impacts on the Deformation of Wear-Resistant Steels

Effect of rotor pole-shoe construction on losses of inverter-fed synchronous motors

Fabrication of a sub-10 nm silicon nanowire based ethanol sensor using block copolymer lithography

A Reduced-Order Two-Degree-of-Freedom Composite Nonlinear Feedback Control for a Rotary DC Servo Motor

Measurements and Modeling of Frost Depth in Railway Tracks

From Responsive Molecules to Interactive Materials

Special Issue: From Responsive Materials to Interactive Materials

Potential of renewable fuel to reduce diesel exhaust particle emissions

High-order lattice-Boltzmann

Vehicle type detection and passenger satisfaction analysis using smartphone sensors and digital surveys

Kinetics and thermochemistry of the reaction of 3-methylpropargyl radical with molecular oxygen

Asymptotics and approximation of large systems of ordinary differential equations

Comparative environmental impacts of additive and subtractive manufacturing technologies

Detection beyond Debye's length with an electrolyte-gated organic field-effect transistor

Locomotion of light-driven soft microrobots through a hydrogel via local melting

Probabilistic approach to physical object disentangling

Enhanced multiaxial fatigue criterion that considers stress gradient effects

Investigating the kinetics and biofuel properties of *Alstonia congensis* and *Ceiba pentandra* via torrefaction

CFD modeling the diffusional losses of nanocluster-sized particles and condensing vapors in 90° bends of circular tubes

The formation and characterization of fretting-induced degradation layers using quenched and tempered steel

Luminescence of Er<sup>3+</sup> doped oxyfluoride phosphate glasses and glass-ceramics

Phosphate/oxyfluorophosphate glass crystallization and its impact on dissolution and cytotoxicity

Icephobicity of Slippery Liquid Infused Porous Surfaces under Multiple Freeze–Thaw and Ice Accretion–Detachment Cycles

Soft robotic gripper with compliant cell stacks for industrial part handling

Position Estimation for Drones based on Visual SLAM and IMU in GPS-denied Environment

Towards an approach for evaluating the quality of requirements

Generic platform for manufacturing execution system functions in knowledge-driven manufacturing systems

Thermal, structural and in vitro dissolution of antimicrobial copper-doped and slow resorbable iron-doped phosphate glasses

Solar Panel Breakage During Heavy Rain Caused by Thermal Stress

Heat Transfer of Impinging Jet  
Effect of Compressibility and Turbulent Kinetic Energy Production

A comparison of five optical surface topography measurement methods

Evaluating the electrode measurement sensitivity of subdermal electroencephalography electrodes

Evaluation of parts of a boat cabin based on exergy - Focusing on environmental and economic assessments

Slurry and dry particle erosion wear properties of WC-10Co4Cr and Cr<sub>3</sub>C<sub>2</sub>-25NiCr hardmetal coatings deposited by HVOF and HVOF spray processes

Chip-by-chip configurable interconnection using digital printing techniques

Branched thiophene oligomer/polymer bulk heterojunction organic solar cell

Tribocorrosion behaviour of two low-alloy steel grades in simulated waste solution

Prediction of contact condition and surface damage by simulating variable friction coefficient and wear

FEM-based wear simulation for fretting contacts

Development of expanded graphite filled natural rubber vulcanizates in presence and absence of carbon black  
Mechanical, thermal and morphological properties

End-plate connections in Bi-axial bending - Measurements

Inertial Sensor-Based State Estimation of Flexible Links Subject to Bending and Torsion

Roll-to-roll coating by liquid flame spray nanoparticle deposition

Role-based visualization of industrial IoT-based systems

Electrolyte-gated organic field-effect transistor sensors based on supported biotinylated phospholipid bilayer

FORMI: A Fast Holonomic Path Planning and Obstacle Representation Method Based on Interval Analysis

Spontaneous formation of three-dimensionally ordered Bi-rich nanostructures within GaAs<sub>1-x</sub>Bi<sub>x</sub>/GaAs quantum wells

The effect of phosphorous and arsenic on the fracture behaviour of a 2,25% Cr-1% Mo Steel

Hexaferrite/polyethylene Composite coatings prepared with flame spraying

Defined-size DNA triple crossover construct for molecular electronics  
Modification, positioning and conductance properties

Running-in effects on friction of journal bearings under slow sliding speeds

Variable speed digital hydraulic transformer-based servo drive

Variable speed drive with hydraulic boost

Experimental study on the behavior of wear resistant steels under high velocity single particle impacts

The deformation, strain hardening, and wear behavior of chromium-alloyed hadfield steel in abrasive and impact conditions

On the effect of deformation twinning and microstructure to strain hardening of high manganese austenitic steel 3D microstructure aggregates at large strains

Barkhausen noise response of three different welded duplex stainless steels

Controlling liquid spreading using microfabricated undercut edges

The potential of electric trucks – An international commodity-level analysis

M-Estimator Application in Real-Time Sensor Fusion for Smooth Position Feedback of Heavy-Duty Field Robots

Spodumene tailings for porcelain and structural materials  
Effect of temperature (1050–1200°C) on the sintering and properties

Detection of gaseous species during KCl-induced high-temperature corrosion by the means of CPFAAS and CI-API-TOF

Smart Skins

Could they be the ultimate sensing tool? Today's industry and personal medical care both strongly demand accurate, reliable, robust, low

Noncovalent functionalization of reduced graphene oxide with pluronic F127 and its nanocomposites with gum arabic

Statistical analysis of E-jet print parameter effects on Ag-nanoparticle ink droplet size

Multi-sensor next-best-view planning as matroid-constrained submodular maximization

Estimation of the largest expected photovoltaic power ramp rates

Concepts, methods and tools for individualized production

Statistical modeling of water vapor transmission rates for extrusion-coated papers

Improving the effect of a nanoscale barrier coating on BOPP film properties by surface pretreatments

Improving the effect of nanoscale barrier coating on BOPP film properties  
Influence of substrate contamination, web handling and pretreatments

Nanoscale barrier coating on BOPP packaging film by ALD

The effects of corona and flame treatment  
Part 2. PE-HD and PP coated papers

Novel equipment to simulate hot air heat sealability of packaging materials

Novel bio-based materials for active and intelligent packaging

Nanocellulose and Polylactic Acid Based Multilayer Coatings for Barrier Applications

Market implementation of active and intelligent packaging-opportunities from a socio-economic perspective

A fractional representation approach to the robust regulation problem for SISO systems

Toward the Atomically Abrupt Interfaces of  $\text{SiO}_x$ /Semiconductor Junctions

Tampere University of Technology, laboratory of materials science, paper converting and packaging technology Tampere, Finland

Cost optimal and nearly zero (nZEB) energy performance calculations for residential buildings with REHVA definition for nZEB national implementation

Analysis of common rail pressure signal of dual-fuel large industrial engine for identification of injection duration of pilot diesel injectors

Pneumatically actuated elastomeric device for simultaneous mechanobiological studies & live-cell fluorescent microscopy

Pneumatic unidirectional cell stretching device for mechanobiological studies of cardiomyocytes

Optical interference lithography using azobenzene-functionalized polymers for micro-and nanopatterning of silicon

Implementation of a direct procedure for critical point computations using preconditioned iterative solvers

Influence of specimen type and reinforcement on measured tension-tension fatigue life of unidirectional GFRP laminates

Hydrazone crosslinked hyaluronan-based hydrogels for therapeutic delivery of adipose stem cells to treat corneal defects

Adaptive and nonlinear control of discharge pressure for variable displacement axial piston pumps

Structures and properties of laser-assisted cold-sprayed aluminum coatings

Fabrication of soft devices with buried fluid channels by using sacrificial 3D printed molds

Hot-box measurements to investigate the internal convection of highly insulated loose-fill insulation roof structures

Redundant robotic manipulator path planning for real-time obstacle and self-collision avoidance

Observation of Coexistence of Yu-Shiba-Rusinov States and Spin-Flip Excitations

Chemical synthesis of WC-Co from water-soluble precursors  
The effect of carbon and cobalt additions to WC synthesis

A comparison of relative displacement fields between numerical predictions and experimental results in fretting contact

Experimental and numerical investigation of fretting fatigue behavior in bolted joints

Characterization of cracks formed in large flat-on-flat fretting contact

Avoiding the high friction peak in fretting contact

ILC1 drive intestinal epithelial and matrix remodelling

Computational design of a novel medium-carbon, low-alloy steel microalloyed with niobium

TOpti  
a flexible framework for optimising energy management for various ship machinery topologies

A TOpti simulation for finding fuel saving by optimising propulsion control and power management

The effect of initial microstructure on the final properties of press hardened 22MnB5 steels

Improving the toughness of thermally sprayed  $\text{Cr}_3\text{C}_2$ -NiCr hardmetal coatings by laser post-treatment

Feed-hopper level estimation and control in cone crushers

Mass balance control of crushing circuits



Corrosion mechanisms of sintered Nd-Fe-B magnets in the presence of water as vapour, pressurised vapour and liquid

Characterization of the microstructure and corrosion performance of Ce-alloyed Nd-Fe-B magnets

Differential basal-to-apical accessibility of lamin A/C epitopes in the nuclear lamina regulated by changes in cytoskeletal tension

Behaviour of leaded tin bronze in simulated seawater in the absence and presence of tribological contact with alumina counterbody  
Corrosion, wear and tribocorrosion

Tribocorrosion behaviour of tin bronze CuSn12 under a sliding motion in NaCl containing environment  
Contact to inert vs. reactive counterbody

Digital hydraulic multi-pressure actuator – the concept, simulation study and first experimental results

Dissolution, bioactivity and osteogenic properties of composites based on polymer and silicate or borosilicate bioactive glass

Käyräviivaiset koordinaatitot kontinuumimekaniikassa

Global energy consumption due to friction and wear in the mining industry

High Temperature Tension HSB Device Based on Direct Electrical Heating

Effects of strain rate and confining pressure on the compressive behavior of Kuru granite

DIC measurements of the human heart during cardiopulmonary bypass surgery

Fretting-induced friction and wear in large flat-on-flat contact with quenched and tempered steel

Normal displacements in non-Coulomb friction conditions during fretting

Third Particle Ejection Effects on Wear with Quenched and Tempered Steel Fretting Contact

Stable and unstable friction in fretting contacts

Running-in in fretting, transition from near-stable friction regime to gross sliding

Effects of added glazing on Balcony indoor temperatures  
Field measurements

Simulating the Drag Coefficient of a Spherical Autonomous Underwater Vehicle

Development and numerical implementation of an anisotropic continuum damage model for concrete

Lithography-free oxide patterns as templates for self-catalyzed growth of highly uniform GaAs nanowires on Si(111)

Effect of finish rolling and quench stop temperatures on impact-abrasive wear resistance of 0.35 % carbon direct-quenched steel

Effect of microstructure on the abrasive wear resistance of steels with hardness 450 HV

Improved dimensional stability with bioactive glass fibre skeleton in poly(lactide-co-glycolide) porous scaffolds for tissue engineering

Resilient Cooperative Voltage Control for Distribution Network with High Penetration Distributed Energy Resources

Shape-dependent plasmonic response and directed self-assembly in a new semiconductor building block, indium-doped cadmium oxide (ICO)

Complete Odometry Estimation of a Vehicle Using Single Automotive Radar and a Gyroscope

Analysis of thermo-active pile structures and their performance under groundwater flow conditions

Investigation on positioning control strategy and switching optimization of an equal coded digital valve system

Improving the thermal performance of concrete-sandwich envelopes in relation to the moisture behaviour of building structures in boreal conditions

Flux-Weakening Control for IPMSM Employing Model Order Reduction

Model Order Reduction of Bearingless Reluctance Motor Including Eccentricity

Chemically tailored dielectric-to-metal transition for the design of metamaterials from nanoimprinted colloidal nanocrystals

Conductivity control via minimally invasive anti-Frenkel defects in a functional oxide

Framework and feasibility study for pairwise comparison tool

Techno-economic evaluation of integrating torrefaction with anaerobic digestion

Deformability analysis and improvement in stretchable electronics systems through finite element analysis

Naturally occurring amino acids

A suitable substitute of N-N'-di-phenyl guanidine (DPG) in silica tyre formulation?

Second-Harmonic Generation from Metal Nanoparticles  
Resonance Enhancement versus Particle Geometry

Less Is More

Enhancement of Second-Harmonic Generation from Metasurfaces by Reduced Nanoparticle Density

A near-infrared optoelectronic approach to detection of road conditions

New design of textile light diffusers for photodynamic therapy

A framework for building behavioral models for design-stage failure identification using dimensional analysis

Measurement theory and dimensional analysis  
Methodological impact on the comparison and evaluation process

Graph based representation and analyses for conceptual stages

Knowledge-based artificial neural network (KB-ANN) in engineering  
Associating functional architecture modeling, dimensional analysis and causal graphs to produce optimized topologies for KB-ANNs

Evaluating retrofit options in a historical city center  
Relevance of bio-based insulation and the need to consider complex urban form in decision-making

Syndecan-4 tunes cell mechanics by activating the kindlin-integrin-RhoA pathway

Semantic analysis of function-solution duality

Kirigami-Based Light-Induced Shape-Morphing and Locomotion

Self-alignment of RFID dies on four-pad patterns with water droplet for sparse self-assembly

Self-alignment in the stacking of microchips with mist-induced water droplets

Divertor remote handling for DEMO  
Concept design and preliminary FMECA studies

Multicriteria selection in concept design of a divertor remote maintenance port in the EU DEMO reactor using an AHP participative approach

A system for real-time detection and tracking of vehicles from a single car-mounted camera

Design and Control of a Flexible Joint as a Hydraulic Series Elastic Actuator for Manipulation Applications

Erbium-doped borosilicate glasses containing various amounts of P<sub>2</sub>O<sub>5</sub> and Al<sub>2</sub>O<sub>3</sub>  
Influence of the silica content on the structure and thermal, physical, optical and luminescence properties

Graphoepitaxial Directed Self-Assembly of Polystyrene-Block-Polydimethylsiloxane Block Copolymer on Substrates Functionalized with Hexamethyldisilazane to Fabricate Nanoscale Silicon Patterns

Block copolymer self-assembly on ethylene glycol (EG) self-assembled monolayer (SAM) for nanofabrication

Wear and impact behaviour of High Velocity Air-Fuel sprayed Fe-Cr-Ni-B-C alloy coatings

Waves in hyperbolic and double negative metamaterials including rogues and solitons

The correlation between gear contact friction and ball on disc friction measurements

Circular dichroism in the second harmonic field evidenced by asymmetric Au coated GaAs nanowires

Second-harmonic generation imaging of semiconductor nanowires with focused vector beams

$\text{Fe}_2\text{O}_3\text{-TiO}_2$  Nano-heterostructure Photoanodes for Highly Efficient Solar Water Oxidation

Vapor Phase Fabrication of Nanoheterostructures Based on ZnO for Photoelectrochemical Water Splitting

Moving Web and Dynamic Problem of Aerothermoelastic Vibrations and Instability

Nonlinear model predictive energy management of hydrostatic drive transmissions

Democratizing composites manufacturing -inexpensive tooling empowers new players

Static friction measurements on steel against uncoated and coated cast iron

Modeling of steels and steel surfaces using quantum mechanical first principles methods

Remote diagnostics application software for remote handling equipment

Enablers and barriers of smart data-based asset management services in industrial business networks

Redox-active, organometallic surface-relief gratings from azobenzene-containing polyferrocenylsilane block copolymers