

XII Maghreb Days of Material Sciences

IOP Conference Series: Materials Science and Engineering
Volume 186

Fez, Morocco
19 – 21 November 2015

Editors:

Ali Ahaitouf
Ben Mohammadi

ISBN: 978-1-5108-3773-7
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Table of contents

Volume 186

XII Maghreb Days of Material Sciences
19–21 November 2015, Fez, Morocco

Accepted papers received: 1 March 2017
Published online: 13 March 2017

Preface

011001
OPEN ACCESS
[XII Maghreb Days of Material Sciences](#)

011002
OPEN ACCESS
[Peer review statement](#)

Nanotechnologies and new-generation materials

012001
OPEN ACCESS
[Transport mechanisms in Schottky diodes realized on GaN](#)

Sarrah Amor, Ali Ahaitouf, Abdelaziz Ahaitouf, Jean Paul Salvestrini and Abdellah Ougazzaden.....1

012002
OPEN ACCESS
[Effect of lithium on linear and nonlinear optical properties of Sn-doped zinc oxide prepared by spray pyrolysis](#)

A Rherari, M Addou, Z Sofiani, M El jouad, M Jbilou and M Diani.....6

012003

OPEN ACCESS

[Vibrational and optical properties of Meso-tetrakis\(4-phenylsulfonate-acid\) porphyrin decorated with graphene oxide.](#)

O Bajjou, M Khenfouch, M Baïtoul, B Mothudi, M Dhlamini, E Faulques and M Maaza.....12

012004

OPEN ACCESS

[Application of the high temperature series expansions method Green's function theory to the spinel systems: \$A_xA'_{1-x}B_2X_4\$](#)

A El Grini, S Salmi, A Marzouk, N Benzakour, K Bouslykhane and A Hourmatallah.....20

012005

OPEN ACCESS

[NIEL calculations for estimating the displacement damage introduced in GaAs irradiated with charged particles](#)

E El Allam, C Inguibert, S Addarkaoui, A Meulenberg, A Jorio and I Zorkani.....26

012006

OPEN ACCESS

[Microscopic study of the structure of the Steel Ni-based Alloy: Hastelloy G35 Alloy](#)

F Sabir, O Ben Lenda, S Saissi, K Marbough, B Tyouke, L Zerrouk, A Ibnlfassi, K Ouzaouit and S Elmadani.....32

012007

OPEN ACCESS

[Structural and optical properties of hydrothermally synthesized vanadium oxides nanobelts](#)

I Derkaoui, M Khenfouch, I Elmokri, B.M Mothudi, M.S Dhlamini, S.J Moloi, I Zorkani, A Jorio and M Maaza.....38

012008

OPEN ACCESS

[Influence of dipolar interactions on the superparamagnetic relaxation time of \$\gamma\text{-Fe}_2\text{O}_3\$](#)

A Labzour, A Housni, K Limame, A Essahlaoui and S Sayouri.....44

012009

OPEN ACCESS

[Preparation and characterization of Miocene clay powders in the region of Taza \(Morocco\) after doping with metal oxides \$Al_2O_3\$](#)

L Mesrar, M Lakrim, M Akdim, A. Benmar, N. ES –Sbai and R Jabrane.....51

012010

OPEN ACCESS

[Determination of the structural properties of the aqueous electrolyte \$LiCl_6H_2O\$ at the supercooled state using the Reverse Monte Carlo \(RMC\) simulation](#)

M. ZIANE, M. HABCHI, A. DEROUICHE, S.M. MESLI, F. BENZOUINE and M. KOTBI.....60

012011

OPEN ACCESS

[Key micromechanics issues in integrated material design](#)

M Bennoura and A Aboutajeddine.....66

012012

OPEN ACCESS

[Electromagnetic Properties of Composites CoFeNiBSiMo, CoFeBSiCr and CoMnSiB in wide frequency bande](#)

My C Elboubakraoui, S Bri and J Foshi.....73

012013

OPEN ACCESS

[Synthesis and characterization of vanadiumoxidecatalysts supported on copper orthophosphates](#)

M Ouchabi, M Baalala, A Elaissi, I Loulidi and M Bensitel.....82

012014

OPEN ACCESS

[Statistical Mechanics of Confined Biological Materials](#)

R El Kinani, M Benhamou and H Kaïdi.....89

012015

OPEN ACCESS

[Stark effect of shallow donor impurities in HgS Inhomogeneous Quantum Dots](#)

S M'zerd, K Rahmani, S Janati, Y Chrafi, I Zorkani and A Jorio.....94

012016

OPEN ACCESS

[Effect of magnesium substitution on the magnetic properties of diluted magnetic spinels \$Ni_{1-x}Mg_xFe_2O_4\$](#)

S Salmi, M El Azhari, A El Grini, A Hourmatallah, N Benzakour, K Bouslykhane and A Marzouk.....102

012017

OPEN ACCESS

[Form effect on the Diamagnetic Susceptibility of a magneto-donor in Quantum Dot](#)

S Janati Edrissi, S M'Zred, Y Chrafi, K Rahmani, I Zorkani, A Mmadi and A Jorio.....107

012018

OPEN ACCESS

[Complex impedance, dielectric relaxation and electrical conductivity studies of \$Ba_{1-x}Sr_xTiO_3\$ ceramics](#)

A Elbasset, S Sayouri S, F Abdi, T Lamcharfi and L Mrharrab.....115

012019

OPEN ACCESS

[Structural study of emulsions stabilized by charged nanoparticles](#)

S El-moudny, M Badia and M Benhamou.....127

012020

OPEN ACCESS

[Spherical Brownian diffusion of particles on liquid-liquid interfaces of Pickering emulsions](#)

S El-moudny, M Badia and M Benhamou.....133

Biomedical and Biology

012021

OPEN ACCESS

[Confining a fluid membrane vesicle of toroidal topology in an adhesive hard sphere](#)

Lila Bouzar, Ferhat Menas and Martin Michael Müller.....136

012022

OPEN ACCESS

[Characterization in vitro studies and antibacterial properties on a sol-gel derived silver incorporated bioglass](#)

S Bouhazma, S Chajri, M Khaldi, M Sadiki, H Barkai, S Elabed, S Ibnsouda Koraichi, B El Bali and M Lachkar.....141

012023

OPEN ACCESS

[Thermal stability of a modified sol-gel derived hydroxyapatite nanopowders](#)

S Herradi, B El Bali, M Khaldi and M Lachkar.....151

Photonics

012024

OPEN ACCESS

[Synthesis, characterization and luminescent properties of \$\text{Sr}_{1-x}\text{Pb}_x\text{WO}_4\$ solid solution \(\$x=0, 0.5\$ and \$1\$ \)](#)

A Hallaoui, A Taoufyq, B Bakiz, F Guinneton, J-C Valmalette, S Villain, M Arab, A Benlhachemi, L Bazzi and J-R Gavarri.....157

Electronics

012025

OPEN ACCESS

[Improvement of Direct Torque Control by using a Space Vector Modulation Control of Three-Level Inverter](#)

A Achalhi, M Bezza, N Belbounaguia and B Boujoudi.....163

012026

OPEN ACCESS

[The optoelectronic properties of a solar energy material: \$\text{Ag}_2\text{HgSnS}_4\$](#)

S Hadjri Mebarki, B Amrani, K Driss Khodja and A Khelil.....172

012027

OPEN ACCESS

[Ultrasonic nondestructive characterization of mortars by the width of the resonances](#)

H Bita, B Faiz, A Moudden, H Lotfi and El H Ouacha.....178

Building materials & Heritage

012028

OPEN ACCESS

[Raman and XRD characterization of Moroccan Marbles](#)

S Khrissi, M Haddad, L Bejjit, S Ait Lyazidi, M El Amraoui and C Falguères.....185

012029

OPEN ACCESS

[On-site XRF characterization of archaeological materials in CERA center of Rissani \(Morocco\)](#)

M El Amraoui, M Haddad, L Bejjit, S Ait Lyazidi and R Lakhal.....191

Energy

012030

OPEN ACCESS

[Sliding mode controller for a photovoltaic pumping system](#)

A ElOugli, S Miqoi, M Boutouba and B Tidhaf.....200

012031

OPEN ACCESS

[Design and realization of an autonomous solar system](#)

A Gaga, O Diouri, N Es-sbai and F Errahimi.....206

012032

OPEN ACCESS

[Natural convection in a three-dimensional cavity filled with nanofluid and partially heated: Effect of the heating section dimension](#)

M Sannad, B Abourida, L Belarache, H Doghmi and Mouzaouit.....215

012033

OPEN ACCESS

[Comparative study of two CPV optical concentrators, using a Fresnel lens as primary optical element](#)

S El Himer, S El-Yahyaoui, A Mechaqrane and A. Ahaitouf.....226

012034

OPEN ACCESS

[Energy efficiency and recovery of heat lost in the Industrial Systems](#)

S Mounkid and A Loukili.....237

012035

OPEN ACCESS

[Thermophysical and mechanical characterization of clay bricks reinforced by alfa or straw fibers](#)

Y Elhamdouni, A Khabbazi, C Benayad, S Mounir and A Dadi.....244

012036

OPEN ACCESS

[Mesoscopic Study of a Square Cavity Ventilated and heated by the bottom](#)

Z E Bouayed and S Houat.....251

012037

OPEN ACCESS

[Optimal design of inverted truncated pyramid with Fresnel lens for concentrated photovoltaic Units](#)

S El-Yahyaoui, S El Himer, A Mechaqrane and A Ahaitouf.....259

Environment

012038

OPEN ACCESS

[Contribution of electromagnetic and tomographic technique to the study of the impact of salinity in soils of the experimental station of Al Ain Atti \(Errachidia, Morocco\)](#)

A Benamara, M El Harnafi and A Ammar.....267

012039

OPEN ACCESS

[Performances of nanofiltration and low pressure reverse osmosis membranes for desalination: characterization and modelling](#)

Y A Boussouga and A Lhassani.....285