

MICROELECTRONICS

Digitalization & Microelectronic Smart Devices

- Latifa EL AHMAR, Ahmed ERRKIK, Jamal ZBITOU, Ilham BOUZIDA, Mohamed LATRACH. A New Configuration of A Planar Passive UHF RFID Tag Antenna using Meander Technique. ICDS Conference 2021.
- Latifa ELAHMAR, Ahmed ERRKIK, Jamal ZBITOU, Ilham BOUZIDA, Ahmed Lakhssassi and Mohamed LATRACH. A New Flexible Passive UHF RFID Tag Antenna using Meander Line. ICDS Conference 2021.
- Souhaima Stiria, Abdelaali Chaoub, António Grilo, Rachid Bennani, Brahim Lakssir and Ahmed Tamtaoui. Hybrid PLC and LoRaWAN Smart Metering - Networks: Modeling and Optimization. ICDS Conference 2021.
- Souhaima Stiriy, Abdelaali Chaoub, António Grilo, Rachid Bennaniy, Brahim Lakssiry, Ahmed Tamtaoui. Optimal Placement of Data Concentrators and Repeaters in PLC-enabled Smart Grids. ICDS Conference 2021.
- BOUZIDA ILHAM, Latifa ELAHMAR. A New Flexible Passive UHF RFID Tag Antenna Using Meander Line. EuCAP 2021 "Europe's flagship conference on antennas and propagation". 2020-12-17.
- Rabie Reda, Taoufiq Saffaj, Salah Eddine Itqiq, Ilham Bouzida, Ouadi Saidi, Kaoutar Yaakoubi, Brahim Lakssir, Najib El Mernissi, El Mestafa El Hadrami. 2020. Predicting soil phosphorus and studying the effect of texture on the prediction accuracy using machine learning combined with near-infrared spectroscopy. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 242, 118736.
- L. EL AHMAR, A. ERRKIK, I. BOUZIDA and M. LATRACH, "A New Passive UHF RFID Tag using Square Split Ring Resonator," 2020 IEEE 2nd International Conference on Electronics, Control, Optimization and Computer Science, 2020, pp. 1-5.

Embedded Systems & Artificial Intelligence

- El-arbi El-alaouy, Hamd Ait abdelali, Yahya Zennayi, François Bourzeix, et al. A new transport-based approach for simulating impact of urban mobility on COVID-19 propagation. ICDS Conference 2021.
- Hatim DERROUZ, Alberto CABRI, Hamd Ait ABDELALI, Rachid OULAD HAJ THAMI, François BOURZEIX, Stefano ROVETTA, Francesco MASULLI.
- End-to-end quantum-inspired method for vehicle classification based on video stream. NCAA Journal 2021.
- Omar BOURJA, Hatim DERROUZ, Hamd Ait ABDELALI, François BOURZEIX. Real Time Vehicle Detection, Tracking, and Inter-vehicle Distance Estimation based on Stereovision and Deep Learning using YOLOv3. IJACSA Journal 2021.
- Hamd Ait Abdelali, Hatim Derrouz, Yahya Zennayi, François Bourzeix, Rachid Oulad Haj Thami. Multiple hypothesis detection and tracking using deep learning for video traffic surveillance. IEEE Access 2021.
- Oumaima Guendoul, Hamd Ait Abdelali, Youness Tabii, Rachid Oulad Haj Thami and Omar Bourja; Vision-based fall detection and prevention for the elderly people: A review & ongoing research. ICDS Conference 2021.

- Charifi, Rajaa and Es-Sbai, Najia and Zennayi, Yahya and Hosni, Taha and Bourzeix, Francois and Mansouri, Anass. Sedimentary phosphate classification based on spectral analysis and machine learning. *Computers & Geosciences* 2021.
- Moussaid, Abdellatif and Fkihi, Sanaa El and Zennayi, Yahya. Tree Crowns Segmentation and Classification in Overlapping Orchards Based on Satellite Images and Unsupervised Learning Algorithms. *Journal of Imaging* 2021.
- Kaoutar Sefrioui Boujema (USMBA), Ismail Berrada, Khalid Fardousse, Othmane Naggar, and François Bourzeix. Toward Road Safety Recommender Systems: Formal Concepts and Technical Basics. *IEEE Transactions on intelligent Transportation Systems* 2021.
- AIT ABDELALI Hamd, BOURJA OMAR, BOURZEIX FRANCOIS, DERROUZ HATIM, ZENNAYI YAHYA. Visual Vehicle Tracking via Deep Learning and Particle Filter. In: Saeed, F., Al-Hadrami, T., Mohammed, F., Mohammed, E. (eds) *Advances on Smart and Soft Computing. Advances in Intelligent Systems and Computing*, vol 1188. Springer, Singapore. https://doi.org/10.1007/978-981-15-6048-4_45. 20 October 2020.

- Rachidi, F., Benhima, R., Kasmi, Y., Sbabou, L., & El Arroussi, H.. Evaluation of microalgae polysaccharides as biostimulants of tomato plant defense using metabolomics and biochemical approaches. *Scientific reports* 2021, 11(1), 1-16.
- Mutale-joan, C., Rachidi, F., Mohamed, H. A., Mernissi, N. E., Aasfar, A., Barakate, M., ... & El Arroussi, H. Microalgae-cyanobacteria-based biostimulant effect on salinity tolerance mechanisms, nutrient uptake, and tomato plant growth under salt stress. *Journal of Applied Phycology* 2021; 33(6), 3779-3795.
- Mahari, W. A. W., Waiho, K., Fazhan, H., Necibi, M. C., Hafsa, J., Mrid, R. B., ... EL Arroussi H & Sillanpää, M. Progress in valorisation of agriculture, aquaculture and shellfish biomass into biochemicals and biomaterials towards sustainable bioeconomy. *Chemosphere* 2021, 133036.
- Danouche, M., El Ghachoui, N., & El Arroussi, H. Phycoremediation mechanisms of heavy metals using living Green microalgae: Physicochemical and molecular approaches for enhancing selectivity and removal capacity. *Heliyon* 2021, 7(7).
- Fal, S., Benhima, R., El Mernissi, N., Kasmi, Y., Smouni, A., & El Arroussi, H. Microalgae as promising source for integrated wastewater treatment and biodiesel production. *International Journal of Phytoremediation* 2021, 1-13.
- En-nahli, Y., El Arroussi, H., Kumar, S., Bouhlal, O., Mentag, R., Hejjaoui, K., ... & Amri, M. Resistance to Orobanche crenata Forsk. in lentil (*Lens culinaris* Medik.): exploring some potential altered physiological and biochemical defense mechanisms. *Journal of Plant Interactions* 2021, 16(1), 321-331.

- Danouche, M., El Arroussi, H., & El Ghachoui, N. Mycoremediation of synthetic dyes by yeast cells: a sustainable biodegradation approach. *Environmental Sustainability* 2021, 1-18.
- Danouche, M., El Arroussi, H., Bahafid, W., & El Ghachoui, N. An overview of the biosorption mechanism for the bioremediation of synthetic dyes using yeast cells. *Environmental Technology Reviews* 2021, 10(1), 58-76.
- Chanda Mutale Joan, Laila Sbabou, El Arroussi Hicham. Microalgae and Cyanobacteria: How Exploiting These Microbial Resources Can Address the Underlying Challenges Related to Food Sources and Sustainable Agriculture: A Review. *Journal of Plant Growth Regulation* 2021; Vol.:(0123456789) <https://doi.org/10.1007/s00344-021-10534-9>.
- Khayi S, Armitage A.D, El Guill M, Meftah Kadmiri I, Lahlali R, Fokar M, Mentag R (2021) Complete mitochondrial genome and phylogeny of the causal agent of Bayoud disease on date palm. *Mitochondrial DNA Part B* 2021; B, 6:10, 3059-3061, DOI: 10.1080/23802359.2021.1978894.
- Mzibra, A., Aasfar, A., Benhima, R. et al. Biostimulants Derived from Moroccan Seaweeds: Seed Germination Metabolomics and Growth Promotion of Tomato Plant. *J Plant Growth Regul* 2021; 40, 353-370. <https://doi.org/10.1007/s00344-020-10104-5>.
- Azaroual S.E, El Mernissi N, Zeroual Y, Bouizgarne B, Meftah Kadmiri I (2021) Effect of *Bacillus* spp. strains on wheat nutrient assimilation and bioformulation by new spray drying approach using natural phosphate powder. *Drying Technology* 2021; DOI: 10.1080/07373937.2021.1950170.
- Mzibra A, Aasfar A, Khouloud M, Farrie Y, Boulif R, Meftah Kadmiri I, Bamouh A, Douira A Improving Growth, Yield, and Quality of Tomato Plants (*Solanum lycopersicum* L) by the Application of Moroccan Seaweed-Based Biostimulants under Greenhouse Conditions. *Agronomy* 2021; 11(7):1373. <https://doi.org/10.3390/agronomy11071373>.
- Rachidi, F., Benhima, R., Kasmi, Y., Sbabou, L., & El Arroussi, H.. Evaluation of microalgae polysaccharides as biostimulants of tomato plant defense using metabolomics and biochemical approaches. *Scientific reports* 2021, 11(1), 1-16.
- Mutale-joan, C., Rachidi, F., Mohamed, H. A., Mernissi, N. E., Aasfar, A., Barakate, M., ... & El Arroussi, H. Microalgae-cyanobacteria-based biostimulant effect on salinity tolerance mechanisms, nutrient uptake, and tomato plant growth under salt stress. *Journal of Applied Phycology* 2021; 33(6), 3779-3795.
- Mahari, W. A. W., Waiho, K., Fazhan, H., Necibi, M. C., Hafsa, J., Mrid, R. B., ... EL Arroussi H & Sillanpää, M. Progress in valorisation of agriculture, aquaculture and shellfish biomass into biochemicals and biomaterials towards sustainable bioeconomy. *Chemosphere* 2021, 133036.
- Danouche, M., El Ghachoui, N., & El Arroussi, H. Phycoremediation mechanisms of heavy metals using living Green microalgae: Physicochemical and molecular approaches for enhancing selectivity and removal capacity. *Heliyon* 2021, 7(7).

- Fal, S., Benhima, R., El Mernissi, N., Kasmi, Y., Smouni, A., & El Arroussi, H. Microalgae as promising source for integrated wastewater treatment and biodiesel production. *International Journal of Phytoremediation* 2021, 1-13.
- En-nahli, Y., El Arroussi, H., Kumar, S., Bouhlal, O., Mentag, R., Hejjaoui, K., ... & Amri, M. Resistance to *Orobanche crenata* Forsk. in lentil (*Lens culinaris* Medik.): exploring some potential altered physiological and biochemical defense mechanisms. *Journal of Plant Interactions* 2021, 16(1), 321-331.
- Danouche, M., El Arroussi, H., & El Ghachoui, N. Mycoremediation of synthetic dyes by yeast cells: a sustainable biodegradation approach. *Environmental Sustainability* 2021, 1-18.
- Danouche, M., El Arroussi, H., Bahafid, W., & El Ghachoui, N. An overview of the biosorption mechanism for the bioremediation of synthetic dyes using yeast cells. *Environmental Technology Reviews* 2021, 10(1), 58-76.
- Chanda Mutale Joan, Laila Sbabou, El Arroussi Hicham. Microalgae and Cyanobacteria: How Exploiting These Microbial Resources Can Address the Underlying Challenges Related to Food Sources and Sustainable Agriculture: A Review. *Journal of Plant Growth Regulation* 2021; Vol.:0123456789 <https://doi.org/10.1007/s00344-021-10534-9>.
- Khayi S, Armitage A.D, El Guilli M, Meftah Kadmiri I, Lahlahi R, Fokar M, Mentag R (2021) Complete mitochondrial genome and phylogeny of the causal agent of Bayoud disease on date palm. *Mitochondrial DNA Part B* 2021; B, 6:10, 3059-3061, DOI: 10.1080/23802359.2021.1978894.
- Mzibra, A., Aasfar, A., Benhima, R. et al. Biostimulants Derived from Moroccan Seaweeds: Seed Germination Metabolomics and Growth Promotion of Tomato Plant. *J Plant Growth Regul* 2021; 40, 353-370. <https://doi.org/10.1007/s00344-020-10104-5>.
- Azaroual S.E, El Mernissi N, Zeroual Y, Bouizgarne B, Meftah Kadmiri I (2021) Effect of *Bacillus* spp. strains on wheat nutrient assimilation and bioformulation by new spray drying approach using natural phosphate powder. *Drying Technology* 2021; DOI: 10.1080/07373937.2021.1950170.
- Mzibra A, Aasfar A, Khouloud M, Farrie Y, Boulef R, Meftah Kadmiri I, Bamouh A, Douira A Improving Growth, Yield, and Quality of Tomato Plants (*Solanum lycopersicum* L) by the Application of Moroccan Seaweed-Based Biostimulants under Greenhouse Conditions. *Agronomy* 2021; 11(7):1373. <https://doi.org/10.3390/agronomy11071373>.
- Aasfar A, Bargaz A, Yaakoubi K, Hilali A, Benni I, Zeroual Y and Meftah Kadmiri I. Nitrogen Fixing Azotobacter Species as Potential Soil Biological Enhancers for Crop Nutrition and Yield Stability. *Front. Microbiol* 2021. 12:628379. doi: 10.3389/fmicb.2021.628379.
- Ramdani, C.; El Fakhouri, K.; Sbaghi, M.; Bouharroud, R.; Boulamtat, R.; Aasfar, A.; Mesfioui, A.; El Bouhssini, M. Chemical Composition and Insecticidal Potential of Six Essential Oils from Morocco against *Dactylopius opuntiae* (Cockerell) under Field and Laboratory Conditions. *Insects* 2021; 12, 1007. <https://doi.org/10.3390/insects12111007>.

- Es-sbihi, F.Z., Hazzoumi, Z., Aasfar, A. et al. Improving salinity tolerance in *Salvia officinalis* L. by foliar application of salicylic acid. *Chem. Biol. Technol. Agric* 2021. 8, 25. <https://doi.org/10.1186/s40538-021-00221-y>.
- Rachid Boulamtat, Abdelhalim Mesfioui, Karim El-Fakhouri, Ali Oubayoucef, Abdelhadi Sabraoui, Abderrahim Aasfar, Mustapha El-Bouhssini. Chemical composition, and insecticidal activities of four plant essential oils from Morocco against larvae of *Helicoverpa armigera* (Hub.) under field and laboratory conditions. *Crop Protection* 2021, Volume 144.
- Meftah Kadmiri, I., El Mernissi, N., ET AL. Bioformulation of Microbial Fertilizer Based on Clay and Alginate Encapsulation. *Curr Microbiol* 78, 86–94 (2021).
- Jbari, N., Elbaouchi, A., Benhima, R., Bennis, I., Boulif, R., Zeroual, Y., & EL Arroussi, H. (2020). Agriculture fertilizer-based media for cultivation of marine microalgae destined for biodiesel production.
- Journal of Energy Management and Technology, 4(4), 49-56.
- Danouche, M., El Ghachoui, N., El Baouchi, A., & El Arroussi, H. (2020). Heavy metals phycoremediation using tolerant green microalgae: Enzymatic and non-enzymatic antioxidant systems for the management of oxidative stress. *Journal of Environmental Chemical Engineering*, 8(5), 104460.
- Mutale-Joan, C., Redouane, B., Najib, E., Yassine, K., Lyamlouli, K., Laila, S., & Zeroual, Y. (2020). Screening of microalgae liquid extracts for their bio stimulant properties on plant growth, nutrient uptake and metabolite profile of *Solanum lycopersicum* L. *Scientific reports*, 10(1), 1-12.
- Azaroual, S.E., Hazzoumi, Z., Mernissi, N.E. et al. Role of Inorganic Phosphate Solubilizing Bacilli Isolated from Moroccan Phosphate Rock Mine and Rhizosphere Soils in Wheat (*Triticum aestivum* L) Phosphorus Uptake. *Curr Microbiol* 77, 2391–2404 (2020).

- Fettach S, Tahi FZ, Hafidi Z, Tachallait H, Karrouchi K, El achouri M, Cherrah Y, Sefrioui H, Faouzi MEA. Synthesis, -glucosidase and -amylase inhibitory activities, acute toxicity and molecular docking studies of thiazolidine-2,4-diones derivatives. *Journal of Biomolecular Structure and Dynamics* 2021;Apr 13:1-12.
- Qriouet Z, Cherrah Y, Sefrioui H, Qmichou Z. Monoclonal Antibodies Application in Lateral Flow Immunochromatographic Assays for Drugs of Abuse Detection. *Molecules* 2021;26:1058-1079.
- Qriouet Z, Qmichou Z, Bouchoutouch N, Mahi H, Cherrah Y, Sefrioui H. Analytical Methods Used for the Detection and Quantification of Benzodiazepines. *J Anal Methods Chem* 2019;2019:2035492. doi: 10.1155/2019/2035492. eCollection 2020.
- Nanobodies and their medical applications Boulenouar H, Amar Y, Bouchoutouch N, Faouzi MEA, Cherrah Y, Sefrioui H. *Genet. Mol. Res* 2020;19(1): MR18452DOI: 10.4238/gmr18452.
- Fettach S Thari FZ, Hafidi Z, Karrouchi K, Bouathmany K, Cherrah Y, El Achouri M, Benbacer L, El Mzibri M, Sefrioui H, Faouzi MEA. Biological, toxicological and molecular docking evaluations of isoxazoline-thiazolidine-2,4-dione analogues as new class of anti-hyperglycemic agents. *J Biomol Struct Dyn.* 2021 Dec 26:1-13. doi: 10.1080/07391102.2021.2017348. Online ahead of print. PMID: 34957934.
- Abha Cherkani-Hassani, Imane Ghanname, Abdellah Zinedine, Hassan Sefrioui, Zineb Qmichou, Nezha Mouane. Aflatoxin M1 prevalence in breast milk in Morocco: Associated factors and health risk assessment of newborns "CONTAMILK study", *Toxicon*, Volume 187, 2020, Pages 203-208.
- Abha Cherkani-Hassani, Imane Ghanname, Abdellah Zinedine, Hassan Sefrioui, Zineb Qmichou & Nezha Mouane (2020) Ochratoxin a in breast milk in Morocco: the affecting dietary habits of the lactating mothers and the degree of exposure of newborns "CONTAMILK study", *Drug and Chemical Toxicology*, 45:3,1081-1087.
- Z Qriouet, A Belaiche, Z Qmichou, Y Cherrah, H Sefrioui. 2020.Benzodiazepines use in Morocco: A nation wide consumption database study between 2004 and 2017. *Asian Journal of Psychiatry* 47, 101852.

Composite & Nanocomposites

- Essabir H., Raji M., Rodrigue D., Bouhfid R., Qaiss A., Multifunctional poly(vinylidene fluoride) and styrene butadiene rubber blend magneto-responsive nanocomposites based on hybrid graphene oxide and Fe₃O₄: synthesis, preparation and characterization. *Journal of Polymer Research*, 2021.
- Chakhtouna H., Zari N., Bouhfid R., Qaiss A.E.K., Benzeid H., Novel photocatalyst based on date palm fibers for efficient dyes removal. *Journal of Water Process Engineering*, 2021.
- Chkirida S., Zari N., Bouhfid R., Qaiss A.E.K., Insight into the bionanocomposite applications on wastewater decontamination: Review. *Journal of Water Process Engineering*, 2021.
- Chakhtouna H., Benzeid H., Zari N., Qaiss A., Bouhfid R., Recent progress on Ag/TiO₂ photocatalysts: photocatalytic and bactericidal behaviors. *Environmental Science and Pollution Research*, 2021.
- Fardioui M., Mekhzoum M.E.M., Qaiss A.E.K., Bouhfid R., Photoluminescent biocomposite films of chitosan based on styrylbenzothiazolium-g-cellulose nanocrystal for anti-counterfeiting applications. *International Journal of Biological Macromolecules*, 2021.
- El Foujji L., El Bourakadi K., Essassi E.M., Boeré R.T., Qaiss A.E.K., Bouhfid R., Solid-state zwitterionic tautomerization of 2-((5-methyl-1H-pyrazol-3-yl)methyl)-1H-benzimidazole: Synthesis, characterization, DFT calculation and docking studies . *Journal of Molecular Structure* , 2021.
- Ez-Zahraoui S., Kassab Z., Ablouh E.-H., Sehaqui H., Bouhfid R., Alami J., El Achaby M., Qaiss A.E.K. Effect of fly ash and coupling agent on the structural, morphological, thermal, and mechanical properties of polyamide 6/acrylonitrile-butadiene-styrene blend. *Polymer Composites*, 2021.
- Chakhtouna H., Benzeid H., Zari N., Qaiss A.E.K., Bouhfid R. Functional CoFe₂O₄-modified biochar derived from banana pseudostem as an efficient adsorbent for the removal of amoxicillin from water. *Separation and Purification Technology*, 2021.
- Bahloul A., Kassab Z., Aziz F., Hannache H., Bouhfid R., Qaiss A.E.K., Oumam M., El Achaby M., Characteristics of cellulose microfibers and nanocrystals isolated from doum tree (*Chamaerops humilis* var. *argentea*). *Cellulose*, 2021.
- Chkirida S., Zari N., Achour R., Hassoune H., Lachehab A., Qaiss A., Bouhfid R., Highly synergic adsorption/photocatalytic efficiency of Alginate/Bentonite impregnated TiO₂ beads for wastewater treatment, *Journal of Photochemistry and Photobiology A: Chemistry*, 2021.
- Nekhlaoui S., Abdelaoui H., Raji M., Essabir H., Rodrigue D., Bensalah M.O., Bouhfid R., Qaiss A.K. Assessment of thermo-mechanical, dye discoloration, and hygroscopic behavior of hybrid composites based on polypropylene/clay (illite)/TiO₂. *International Journal of Advanced Manufacturing Technology* 2021.

NANOTECHNOLOGY

Composites & Nanocomposites

- Bouhfid N., Raji M., Nekhlaoui S., Essabir H., Rodrigue D., Bensalah M.O., Qaiss A.E.K. Mechanical Properties and Thermal Conductivity of Epoxy Resin Reinforced with Functionalized Graphene Nanosheets and Woven Glass Fabric. *Advanced Engineering Materials* 2021.
- M'ghari O., Hassani F.S.A., Mekhzoum M.E.M., Zari N., Bouhfid R., Qaiss A.E.K., Elaboration of a composite material based on plaster reinforced with phase change material/Oakum Fiber: physical, thermal and mechanical properties. *Journal of Energy Storage*, 2021.
- Chkirida S., Zari N., Achour R., Qaiss A., Bouhfid R., Efficient hybrid bionanocomposites based on iron-modified TiO₂ for dye degradation via an adsorption-photocatalysis synergy under UV-Visible irradiations, *Environmental Science and Pollution Research* 2021.
- Bensalah H., Raji M., Abdellaoui H., Essabir H., Bouhfid R., Qaiss A., Thermo-mechanical properties of low-cost "green" phenolic resin composites reinforced with surface modified coir fiber. *International Journal of Advanced Manufacturing Technology* 2021.
- Bahloul A., Kassab Z., El Bouchti M., Hannache H., Qaiss A.E.K., Oumam M., El Achaby M. Micro- and nano-structures of cellulose from eggplant plant (*Solanum melongena* L) agricultural residue. *Carbohydrate Polymers* 2021.
- Ouarhim W., Ait-Dahi M., Bensalah M.-O., El Achaby M., Rodrigue D., Bouhfid R., Qaiss A. Characterization and numerical simulation of laminated glass fiber-polyester composites for a prosthetic running blade. *Journal of Reinforced Plastics and Composites* 2021.
- Abdellaoui H., Raji M., Essabir H., Bouhfid R., Qaiss A.E.K., Effect of Hybridization and Long-Term Aging on Mechanical and Rheological Properties Epoxy Laminate Composites: Case of Jute/Coir Fibres and Jute/Doum Fibres, *Waste and Biomass Valorization* 2021.
- Meftah Kadmiri I., El Mernissi N., Azaroual S.E., Mekhzoum M.E.M., Qaiss A.E.K., Bouhfid R. Bioformulation of Microbial Fertilizer Based on Clay and Alginate Encapsulation. *Current Microbiology* 2021 .
- Kakou, C., Raji, M., Abdellaoui, H., Bouhfid, R., Qaiss, A., Rodrigue, D. The Effect of Physical Aging on the Mechanical Properties of Raw, Treated and Compatibilized Coir Fibers-Based Polyisoprene Bio-Composites . 2020. 35. *International Polymer Processing* 429- 439.
- Essabir, H., El Mechtaoui, F.Z., Nekhlaoui, S. et al. Compatibilization of PA6/ABS blend by SEBS-g-MA: morphological, mechanical, thermal, and rheological properties. *Int J Adv Manuf Technol* 110, 1095-1111 (2020). Marya Raji, Abou el kacem Qaiss and Rachid Bouhfid. Effects of bleaching and functionalization of kaolinite on the mechanical and thermal properties of polyamide 6 nanocomposites. *RSC Adv.*, 2020,10, 4916-4926.

N A N O T E C H N O L O G Y

Materials & Energy Storage

- Aouadi Khalil, Corinne Nouveau, Aurelien Besnard, Brahim Tlili, Alex Montagne, Moez Chafra. The Effect of Bilayer Periods and Their Thickness in Magnetron Sputtering Protective Multilayer Coatings for Tribological Applications. *Journal of Materials Engineering and Performance*; 2021.
- Mamori Habiba, Benyoussef Abdelilah, El Abdallah, Taleb Abdelhafed, Ahmed Ennaoui, et al.. Enhanced photocatalytic activity of phosphorene under different pH values using density functional theory (DFT). *RSC Advances*, Royal Society of Chemistry, 2021, 11 (26), pp.16004 - 16014.
- CHBIHI Abdelouahed, BOUKHEIR Sofia, NAAMANE Sanae, Mustapha MOUADINE, BOUHAMIDI Moulay Hafid. Outdoor investigation of the performance of three pv panels technologies in morocco, *Solar Energy*
- O.Chdil, M.Balli, P.De Rango, K.El Maalam, A.El Boukili, O.Mounkachi. Assessment of near Pr₂/3Sr₁/3MnO₃ oxide in magnetic cooling. *Évaluation d'un oxyde Pr₂/3Sr₁/3MnO₃ en refroidissement magnétique*. *International Journal of Refrigeration*; 2021.
- Faissal El Manjli, Omar Mounkachi, Ghassane Tiouitchi, Khadija El Maalam, Abdelilah Benyoussef, Frédéric Boschini, Abdelfattah Mahmoud, Mohammed Hamedoun, Mustapha Ait Ali. From amorphous red phosphorus to black phosphorus crystal: An optimization, controllable and highest yield synthesis process. *Journal of Crystal Growth*; 2021.
- Sara Lakhouil, Sofia Boukheir, Abdelouahed Chbihi, Sanae Naamane. Outdoor exposure approach in a harsh environment toward the study of corrosion aspects of primary solar reflectors. *Journal Solar energy*, 2021
- Habiba Mamori, Abdallah El Kenz, Abdelilah Benyoussef, Abdelhafed Taleb, Ahmed Ennaoui, Khadija El Maalam, Mohammed Hamedoun, Omar Mounkachi. Dynamic stability in phosphorene bilayer with different stacking orders: A first principle study. *Journal Materials Science in Semiconductor Processing*, 2021.
- A. El Boukili, O. Mounkachi, M. Hamedoun, P. Lachkar, E.K. Hlil, A. Benyoussef, M. Balli, H. Ez-Zahraouy. 2021. A study of structural, magnetic and magnetocaloric properties of (1-x)La_{0.6}Ca_{0.4}MnO₃/xMn₂O₃ composite materials, *Journal of Alloys and Compounds*, Volume 859, 2021, 158392.
- Faissal El Manjli, Omar Mounkachi, Abdelilah Benyoussef, Abdelfattah Mahmoud, Laura Manceriu, Frédéric Boschini, Mohammed Hamedoun, Khadija El Maalam and Mustapha Ait Ali. Efficient synthesis of pure bulk black phosphorus and high-quality exfoliation of phosphorene. *Journal of Materials Chemistry*
- M. Ben Ali, T. Mahfoud, Lamouri, E. Salmani, H. Ez-zahraouy , M. Hamedoun, A. Benyoussef, E.K. Hlil and H. El Moussaoui. Experimental magnetic properties of Col-xMnxFe₂O₄ nanoparticles confirmed by theoretical investigations. *Journal of materialtoday physics*, 2021.
- L. Fkhar, A. Mahmoud, , F. Boschini, A. Schrijnemakers, K. El maalam, M. Hamedoun, A. Benyoussef, E.K. Hlil, M. Ait Ali, M. Balli, O. Mounkachi. A study of magnetic and magnetocaloric properties of 0.95 (La_{0.45}Nd_{0.25}Sr_{0.3}MnO₃)/0.05CuO composites

NANOTECHNOLOGY

Optics & Photonics

prepared by spray drying. 2020, Inorganic Chemistry Communications, Volume 119, 108129.

- Sofia Boukheir, Abdelouahed Chbihi, Amal Matal, Sara Lakhoul, Sanae Naamane, Mustapha Mouadine, and Moulay Hafid Bouhamidi , "Physical and chemical reactivity of mechanically primed glass surfaces of CSP reflectors", AIP Conference Proceedings 2303, 150005; 2020.
- Mohamed Guerguer, Sanae Naamane, Olivier Raccurt, and Hassan Bouaouine , "Neural network modeling of Moroccan weather conditions effect on solar reflectors degradation", AIP Conference Proceedings 2303, 150008; 2020;
- Sanae Naamane, Abdelouahed Chbihi, Sofia Boukheir, Mustapha Mouadine, Khadija Tahri, Sahar Bouaddi, and Moulay Hafid Bouhamidi , "Towards the choice of concentrated solar power and photovoltaic materials for Moroccan conditions", AIP Conference Proceedings 2303, 150013, 2020.

- Enric Grau-Luque , Ikram Anefnaf, Nada Benhaddou, Robert Fonoll-Rubio, Ignacio Becerril-Romero, Safae Aazou, Edgardo Saucedo, Zouheir Sekkat, Alejandro Perez-Rodriguez, Victor Izquierdo-Roca and Maxim Guc, "Combinatorial and machine learning approaches for the analysis of Cu₂ZnGeSe₄: influence of the off-stoichiometry on defect formation and solar cell performance", J. Mater. Chem. A 2021.
- I. Anefnaf, S. Aazou, Y. Sánchez, P. Vidal-Fuentes, R. Fonoll-Rubio, Kunal J. Tiwari, S. Giraldo, Z. Jehl-Li-Kao, J. Andrade-Arvizu, M. Guc, E. Saucedo, Z. Sekkat, "Insights on the limiting factors of Cu₂ZnGeSe₄ based solar cells, Solar Energy Materials and Solar Cells 2021. 227:111106.
- Ikram Anefnaf, Safae Aazou, Guy Schmerber, Aziz Dinia, Zouheir Sekkat, Tailoring PEIE capped ZnO binary cathode for solution-processed inverted organic solar cells, Optical Materials, Volume 116, 2021, 111070.
- Dmitry V. Nesterenko, Roman Pavelkin, Shinji Hayashi, Zouheir Sekkat & Victor Soifer, Fano Approximation as a Fast and Effective Way for Estimating Resonance Characteristics of Surface Plasmon Structures. Plasmonics 2021.
- Najat Andam, Refki Siham, Shinji Hayashi, Zouheir Sekkat, Plasmonic mode coupling and thin film sensing in metal-insulator-metal structures. Scientific Report 2021.
- Najat Andam, Siham Refki, Hidekazu Ishitobi, Yasushi Inouye and Zouheir Sekkat, Optical Characterization of Ultra-Thin Films of Azo-Dye-Doped Polymers Using Ellipsometry and Surface Plasmon Resonance Spectroscopy. Photonics 2021.
- Kengo Motokura, Minoru Fujii, Dmitry V. Nesterenko, Zouheir Sekkat, and Shinji Hayashi, Coupling of Planar Waveguide Modes in All-Dielectric Multilayer Structures: Monitoring the Dependence of Local

NANOTECHNOLOGY

Optics & Photonics

- Electric Fields on the Couplingn. Strength. Phys. Rev. Applied 2021.
- Anefnaf, I.; Aazou, S.; Schmerber, G.; Refki, S.; Zimmermann, N.; Heiser, T.; Ferblantier, G.; Slaoui, A.; Dinia, A.; Abd-Lefdil, M.; Sekkat, Z. Polyethylenimine-Ethoxylated Interfacial Layer for Efficient Electron Collection in SnO₂-Based Inverted Organic Solar Cells. Crystals 2020, 10, 731.
- Nada Benhaddou, Safae Aazou, Robert Fonoll-Rubio , Yudania Sánchez , Sergio Giraldo, Maxim Guc , Lorenzo Calvo-Barrio, Victor Izquierdo-Roca , Mohammed Abd-Lefdil, Zouheir Sekkat and Edgardo Saucedo. Uncovering details behind the formation mechanisms of Cu₂ZnGeSe₄ photovoltaic absorbers. J. Mater. Chem. C, 2020, 8, 4003-4011.
- Nada Benhaddou, Safae Aazou, Yudania Sánchez, Jacob Andrade-Arvizu, Ignacio Becerril-Romero, Maxim Guc, Sergio Giraldo, Victor Izquierdo-Roca, Edgardo Saucedo, Zouheir Sekkat,Investigation on limiting factors affecting Cu₂ZnGeSe₄ efficiency: Effect of annealing conditions and surface treatment,Solar Energy Materials and Solar Cells,Volume 216,2020,110701.
- Dmitry V. Nesterenko, Sara Moujdi, Shinji Hayashi, and Zouheir Sekkat. Simulation of photochemically induced motion of matter in gradient light fields. Journal of Applied Physics 127, 243106; 2020.
- T Todorov et al . Solution-based synthesis of kesterite thin film semiconductors.2020 J. Phys. Energy 2 012003.
- Bougdid, Y., Sekkat, Z. Voxels Optimization in 3D Laser Nanoprinting. Sci Rep 10, 10409 (2020).
- Anefnaf, I.; Aazou, S.; Schmerber, G.; Refki, S.; Zimmermann, N.; Heiser, T.; Ferblantier, G.; Slaoui, A.; Dinia, A.; Abd-Lefdil, M.; Sekkat, Z. Polyethylenimine-Ethoxylated Interfacial Layer for Efficient Electron Collection in SnO₂-Based Inverted Organic Solar Cells. Crystals 2020, 10, 731.
- Zouheir Sekkat. Model for athermal enhancement of molecular mobility in solid polymers by light. 2020. Phys. Rev. E 102, 032501.
- I. Anefnaf, S. Aazou, G. Schmerber, A. Dinia, Z. Sekkat. Study the effect of fullerene derivatives ratio on P3HT-based inverted organic solar cells. Proceedings Volume 11474, Organic, Hybrid, and Perovskite Photovoltaics XXI; 114741P; 2020.
- S. Giraldo et al., "Effect of Alkali Doping Strategies on the Performance of Wide Band Gap Cu₂ZnGeSe₄ Thin Film Solar Cells," 2020 47th IEEE Photovoltaic Specialists Conference (PVSC), 2020, pp. 0732-0735.
- Hidekazu Ishitobi, Tomoko Akiyama, Zouheir Sekkat, and Yasushi Inouye. The Journal of Physical Chemistry C 2020 124 (47), 26037-26042
- Elhani, S., Ishitobi, H., Inouye, Y. et al. Surface Enhanced Visible Absorption of Dye Molecules in the Near-Field of Gold Nanoparticles. Sci Rep 10, 3913; 2020.
- Kengo Motokura et al. Wide-range line shape control of Fano-like resonances in all-dielectric multilayer structures based on enhanced light absorption in photochromic waveguide layers. Journal of Applied Physics 127, 073103; 2020.

NANO TECHNOLOGY

VARENA (Natural Resources Valorisation)

Materials coating

- Chapter Book: Controlled Release Fertilizers for Sustainable Agriculture ISBN 978-0-12-819555-0; Controlling factors of slow or controlled-release fertilizers I. Ganetri, Y. Essamlali, O. Amadine, K. Danoun, S. Aboulhouz, M. Zahouily. ELSEVIER 2021, pp. 11-129.
- A. Amedlous, O. Amadine, Y. Essamlali, N. Semlal, M. Zahouily Copper Loaded Hydroxyapatite Nanoparticles as eco-friendly Fenton-like catalyst to Effectively Remove Organic Dyes. *Journal of Environmental Chemical Engineering*, 2021, 9(4), 105501.
- B. Rezki, Y. Essamlali, M. Aadil, N. Semlal, M. Zahouily. Biodiesel production from rapeseed oil and low free fatty acid waste cooking oil using a cesium modified natural phosphate catalyst. *RSC Advances*, 2020, 10(67), pp. 41065-41077.
- ABOUL-HROUZ Soumia,AMADINE OTHMANE,DANOUN KARIM,ESSAMLALI YOUNESS,GANETRI IKRAM,ZAHOUILY MOHAMED. Controlling factors of slow or controlled-release fertilizers. *Chapitre Book Elsevier - ScienceDirect*. Pages 111-129; 2020.
- AMADINE OTHMANE,DANOUN KARIM,ESSAMLALI YOUNESS,ZAHOUILY MOHAMED. Eco-friendly approach to access of quinoxaline derivatives using nanostructured pyrophosphate Na₂PdP₂O₇as a new, efficient and reusable heterogeneous catalyst. *BMC Chemistry*. 14 (1),6; 2020.
- ESSAMLALI YOUNESS,ZAHOUILY MOHAMED. Effective removal of Cu(II) from aqueous solution over graphene oxide encapsulated carboxymethylcellulose-alginate hydrogel microspheres: towards real wastewater treatment plants. *Environmental Science and Pollution Research*. 27 (7), pp. 7476-7492; 2020.
- AMADINE OTHMANE,ESSAMLALI YOUNESS,ZAHOUILY MOHAMED. Surface modification of highly hydrophobic polyester fabric coated with octadecylamine-functionalized graphene nanosheets. *RSC Advances*. 10 (42), pp. 24941-24950. 2020.
- ZAHOUILY MOHAMED. Design, synthesis, biological evaluation and molecular docking of new uracil analogs-1,2,4-oxadiazole hybrids as potential anticancer agent. *Bioorganic and Medicinal Chemistry Letters*; 30 (19),127438. 2020.
- ESSAMLALI YOUNESS,ZAHOUILY MOHAMED. Biodiesel production from rapeseed oil and low free fatty acid waste cooking oil using a cesium modified natural phosphate catalyst. *RSC Advances*. 10 (67), pp. 41065-41077; 2020.

- A detailed investigation on the corrosion inhibition effect of by newly synthesized pyran derivative on mild steel in 1.0 M HCl: Experimental, surface morphological (SEM-EDS, DRX& AFM) and computational analysis (DFT & MD simulation). *Journal of Molecular Liquids* 2021, 344, art. no. 117777.
- Investigation of Physical and electrochemical properties of Ni doped CeO₂ Thin films: DFT calculation. *Current Applied Physics* 2021, 31, pp. 171-181.
- Insight into the corrosion inhibition of novel macromolecular epoxy resin as highly efficient inhibitor for carbon steel in acidic mediums: Synthesis, characterization, electrochemical techniques, AFM/ UV-Visible and computational investigations. *Journal of Molecular Liquids* 2021, 337, art. no. 116492.

- Functionalization effect on the corrosion inhibition of novel eco-friendly compounds based on 8-hydroxyquinoline derivatives: Experimental, theoretical and surface treatment. *Chemical Physics Letters* 2021, 776, art. no. 138700.
- Effect of alkyl group position on adsorption behavior and corrosion inhibition of new naphthol based on 8-hydroxyquinoline: Electrochemical, surface, quantum calculations and dynamic simulations. *Journal of Molecular Liquids* 2021, 335, art. no. 116552.
- ZnCr-LDHs with dual adsorption and photocatalysis capability for the removal of acid orange 7 dye in aqueous solution. *Journal of Science 2021: Advanced Materials and Devices*, 6 (1), pp. 118-126.
- Synthesis and anticorrosive properties of epoxy polymer for CS in [1 M] HCl solution: Electrochemical, AFM, DFT and MD simulations. *Construction and Building Materials* 2021, 270, art. no. 121454.
- Insights in the Aqueous and Adsorbed Photocatalytic Degradation of Carbamazepine by a Biosourced Composite: Kinetics, Mechanisms and DFT Calculations. *International Journal of Environmental Research* 2021, 15 (1), pp. 135-147.
- New epoxy composite polymers as a potential anticorrosive coatings for carbon steel in 3.5% NaCl solution: Experimental and computational approaches (2021) *Chemical Data Collections*, 31, art. no. 100619.
- Corrosion inhibition of copper in sulfuric acid via environmentally friendly inhibitor (*Myrtus Communis*): Combining experimental and theoretical methods (2021) *Journal of Molecular Liquids*, art. no. 117982.
- Enhanced photocatalytic activity of supported Cu-doped ZnO nanostructures prepared by SILAR method (2021) *Optical Materials*, 111, art. no. 110669.
- TiO₂ and activated carbon of *Argania Spinosa* tree nutshells composites for the adsorption photocatalysis removal of pharmaceuticals from aqueous solution. *Journal of Photochemistry and Photobiology A: Chemistry*, 2020, 388, 112183
- Nanocomposite material from TiO₂ and activated carbon for the removal of pharmaceutical product sulfamethazine by combined adsorption/photocatalysis in aqueous media. *Environmental Science and Pollution Research*, 2020, 27(20), pp. 25523-25534.
- Transparent and Self-Cleaning Surfaces Based on Nanocomposite Sol-Gel Coatings. *ChemistrySelect* 2020, 5, 1-11.
- Development and potential performance of prepolymer in corrosion inhibition for carbon steel in 1.0 M HCl: Outlooks from experimental and computational investigations. 2020, *Journal of Colloid and Interface Science*, 574, pp. 43-60.

- Younos Bouzian, Sevgi Kansiz, Lhassane Mahi, Noureddine Hamou Ahabchane, Joel T. Mague, Necmi Dege, Khalid Karrouchif and El Mokhtar Essassi. Crystal structure and Hirshfeld surface analysis of hexyl 1-hexyl-2-oxo-1,2-dihydroquinoline-4-carboxylate. *Acta Cryst.* (2020). E76, 642-645.
- Labbadi, H El Moussaoui. An improved adaptive fractional-order fast integral terminal sliding mode control for distributed quadrotor. *Mathematics and Computers in Simulation* 2021 ; 188, 120-134.
- A Natik, R Moubah, Y Abid, H Zaari, H El Moussaoui, et al. Annealing time effects on the structural, morphological and optical properties in hybrid CH₃NH₃PbI₃ perovskites: Experimental and ab-initio investigations. *Optical Materials* 2021. 109, 110255.
- F Gadhouni, I Kallel, Z Benzarti, N Abdelmoula, M Hamedoun et al. Investigation of magnetic, dielectric and optical properties of BiFeO_{0.5}MnO_{0.5}O₃ multiferroic ceramic. *Chemical Physics Letters* 2020. 753, 137569.
- Dânoun, K., Essamlali, Y., Amadine, O., Mahi, H., & Zahouily, M. (2020). Eco-friendly approach to access of quinoxaline derivatives using nanostructured pyrophosphate Na₂PdP₂O₇ as a new, efficient and reusable heterogeneous catalyst. *BMC chemistry*, 14(1), 6.
- Z Makhouti, T Mahfoud, M Hamedoun, EK Hlil, ME Marssi, et al. Magnetically controlled insertion of cobalt ferrite nanoparticles into a porous anodic aluminum oxide (AAO) membrane. *Applied Nanoscience* 2020, 1-8.
- F El Bachraoui, Z Chchiyai, Y Tamraoui, H El Moussaoui, J Alami et al. Optical and magnetic properties of perovskite materials: *Journal of Rare Earths* 2020. Ba_{0.3}La_{0.7}Ti_{0.3}Fe_{0.7}O₃ and Ba_{0.1}La_{0.9}Ti_{0.1}Fe_{0.9}O₃.
- S Elkhoud, Z Yamkane, J Louafi, M Moutataouia, LH Omari, A Elouafi ; Structural, morphological and magnetic properties of Sr_{0.54}Ca_{0.46}Fe₆, 5Al₅, 5019 M-type hexaferrites: Effects of annealing temperature. *Solid State Communications* 2021 ; 337, 114453.