**Faculté/Institut : Des Sciences et de la Technologie**

**Département : Electronique**

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| 1. **Identification du laboratoire/Unité de recherche**
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| Modélisation des dispositifs a énergies renouvelables et nanométriques | إسم المخبر |
|  Intitulé du Laboratoire | Modélisation des dispositifs a énergies renouvelables et nanométriques |
|  Acronyme du labo | - **MoDERNa** |
|  Adresse électronique | contact@moderna-umc.com |
|  Site web ou URL | <http://www.moderna-umc.com>  |
|  Année d’Agrément : | 2011 | Tel : 03181 89 66 / 0554973915 | Fax : 03181 89 66 |

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| 1. **Directeur du laboratoire/Unité de recherche**
 |
|  Nom & Prénom | KERROUR Fouad | Grade : MCA |
|  Adresse Electronique | f\_kerrour@moderna-umc.com |
|  Nombre Equipes : | 4 | Nbre Chercheurs: 45 | Nbre Personnel soutien: 00 |

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| 1. **Présentation du laboratoire**
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| ***Thèmes mis en œuvres :***1. *L’équipe de Simulation et modélisation de dispositif électronique est* Constitué de deux axes recherches:

**Axe 1 -Systèmes à EnR et composant nanométrique (capteur Hybride, MESFET, HEMT, CNTFET, etc…)****Axe 2- Capteur de pression pour diverses applications (MEMS, NEMS, etc…)**1. ***L’équipe intitulée :*** Conception, Elaboration et Simulation de Couches Minces Nanométriques pour les Cellules PV travail sur les axes suivants : ***…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..……………………………………………………………………………………………………………………….……………………………………………………………………………………………………………………………………………….***
2. ***L’ équipe 3 intitulée :*** Systèmes PV, du dispositif à l’application ***travail sur les thèmes suivants :***

1. ***L’ équipe 4 intitulée :*** Système à EnR: Etude de la charge, travail sur les thèmes suivants :
2. Modélisation de la cellule PV, du générateur et étude de la caractéristiques I-V et P-V.
3. Etude, modélisation et optimisation de l’étage d’adaptation entre la source et la charge
4. Etude de la charge et connexion au réseau.
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| ***Mots-Clés :* capteur Hybride, MESFET, HEMT, CNTFET, MEMS, NEMS, mppt, convertisseur, batterie, PV, éolien, charge** |

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| 1. **Chefs d’équipes**
 |
| .Titre de l’Equipe1 | *Simulation et modélisation de dispositif électronique:* **Axe 1 -Systèmes à EnR et composant nanométrique** **Axe 2- Capteur de pression pour diverses applications** |
| Nom-Chef d’équipe[[1]](#footnote-1) | **KERROUR FOUAD** | Grade : MCA |
| Titre de l’Equipe2 | Conception, Elaboration et Simulation de Couches Minces Nanométriques pour les Cellules PV |
| Nom-Chef d’équipe[[2]](#footnote-2) | **BOUKEZZATA Messaoud** | Grade : Pr. |
| Titre de l’Equipe3 | Systèmes PV, du dispositif à l’application |
| Nom-Chef d’équipe[[3]](#footnote-3) | **HAOUAM Abdessalem** | Grade : MCA |
| Titre de l’Equipe4 | Système à EnR: Etude de la charge |
| Nom-Chef d’équipe4 | **CHENNI Rachid** | Grade : Pr. |
| 1. **Liste des publications:**
2. Mouatsi. A, Marir-Benabbas. M, «Modeling of sub-band and diameter effect in carrier concentration of CNTFET », Materials Science in Semiconductor Processing, Vol 28, pp15-120, December 2014, DOI: 10.1016/j.mssp.2014.07.033.
3. **Mouatsi. A,** M.Marir-Benabbas, « Band structure of CNT effect on the CNTFET performances  *International journal of nanotechnology and application (IJNA),* vol.3, Issue 2, pp 9-14, 2013- ICID: 1046544. ISSN 2277-4777
4. Marir Benabbas, **I. Bouneb**, « Nanometric modelisation of gas structure, a Multidimensional quantum well. » , *international journal of electrical and electronics engineering (IJEEE) »,Vol-3,Iss-1, pp 41-56, 2013* *IF:0.8 ISSN(PRINT) 2231-5284*
5. I .Bouneb, .M .Marir Benabbas, N.Raveu, H.Baudrand, « Influence of different technological parameters on the accumulation barrier of nanostructure AlGaAs/GaAs», International Review of PHYSICS - April 2011 (Vol. 5 N. 2), pp. 60-63- ISSN: 1971-680X- e-ISSN: 1971-6796.
6. I.BOUNEB and F.KERROUR, «Nanometric Modelisation to characterize dynamics carriers in a HEMT heterostructure(ALGaAs/GaAs) using an effectif doping», *Key Engineering Materials Vol. 644 (2015) pp 26-30 © (2015) Trans Tech Publications, Switzerland doi:10.4028/*
7. I.BOUNEB and F.KERROUR, « A new expression of Ns versus Ef to an accurate control charge model for AlGaAs/GaAs  »,IOP Conference Series: Materials Science and Engineering, 108 (2016) 012045
8. **H.Ben Cheikh el Hocine**, M.Marir- Benabbas, « Study of Electrical and Thermal Performance of a Hybrid PVT Collector», International Journal of Electrical and Electronics Engineering Research (IJEEER), ISSN 2250-155X, Vol. 3, Issue 4, Oct 2013, pp 95-106.
9. **H.Ben Cheikh el Hocine**, M.Marir- Benabbas, «Influence of internal and external parameters in temperature of hybrid PV/T water collector », Journal of Energy and Power Engineering, USA, ISSN 1934-8975, Volume 7, Nov. 2013
10. **H.Ben Cheikh el Hocine**, M.Marir- Benabbas, «Study of various configuration of hybrid PVT system with dual heat extraction operation», International Journal of Engineering and Innovative Technology (IJEIT), ISSN 2277-3754, Volume 3, Issue 3, September 2013.
11. ben cheikh el hocine hanene, Touafek Khaled, Kerrour Fouad, Khelifa Abdelkrim, Tabet Ismail, Haloui Hafsia «A Three-Dimensional Modeling of Photovoltaic Thermal Collector», International Journal of Renewable Energy Research-IJRER,  [Vol 6, No 2 (2016)](http://www.ijrer.org/ijrer/index.php/ijrer/issue/view/4785074604081174), pp 384-391 Online ISSN: 1309-0127.
12. [H. Ben cheikh el hocine](http://www.sciencedirect.com/science/article/pii/S1876610215015179) , [K. Touafek](http://www.sciencedirect.com/science/article/pii/S1876610215015179) , [F. Kerrour](http://www.sciencedirect.com/science/article/pii/S1876610215015179), [H. Haloui](http://www.sciencedirect.com/science/article/pii/S1876610215015179), [A. Khelifa](http://www.sciencedirect.com/science/article/pii/S1876610215015179)  , « Model Validation of an Empirical Photovoltaic Thermal (PV/T) Collector  », Energy Procedia 74 (2015) pp 1090–1099, [doi:10.1016/j.egypro.2015.07.749](http://dx.doi.org/10.1016/j.egypro.2015.07.749)
13. A.BEDDIAF, F.KERROUR ans S. KEMOUCHE, « The Effect of Temperature and Doping Level on the characteristics of Piezoresistive Pressure Sensor», Journal of Sensor Technology, 2014, 4, 59-65 Published Online June 2014 in SciRes.
14. A.BEDDIAF, F.KERROUR ans S. KEMOUCHE, « Thermo mechanical modelling of Piezoresistive pressure sensor”, International Review on Modelling and Simulations (IREMOS) Vol 7 n°3 pp 517-522 august 2014, Paper ID: 15461.
15. F.KERROUR, S. KEMOUCHE ans A.BEDDIAF, « Performance Optimization of a Capacitive Pressure Sensor », Key Engineering Materials Vol. 644 (2015) pp 101-105 © (2015) Trans Tech Publications, Switzerland DOI: 10.402.
16. A. Beddiaf, F. Kerrour, S. Kemouche, «[Thermal drift characteristics of capacitive pressure sensors](http://jestec.taylors.edu.my/Articles%20in%20Press/11_6_3.pdf)», Journal of Engineering Science & Technology. (JESTEC). Volume 11, Issue 6 (June 2016).
17. Abdelaziz Beddiaf, Fouad Kerrour, Salah Kemouche, «A Numerical Model of Joule Heating in Piezoresistive Pressure Sensors», **International Journal of Electrical and Computer Engineering (IJECE),** Vol. 6, No. 3, June 2016, pp. 1223 ~ 1232**,** ISSN: 2088-8708,
18. Fouad Kerrour et al «Modeling of thermal behavior of N-doped silicon resistor», ***Journal of Sensor Technology*, 2012, 2, pp 132-137** doi:10.4236/jst.2012.23019 Published Online September 2012.
19. K. Aouni, F. Kerrour, « Dynamic Analysis of Quantum Well Laser», Proceedings of 2015 IEEE International Renewable and Sustainable Energy Conference, IRSEC 2015, Pages: 1-3,Mars2016, DOI: [10.1109/IRSEC.2015.7455073](http://dx.doi.org/10.1109/IRSEC.2015.7455073)
20. H. Ben cheikh el hocine\*, K.Touafek\*\*, F.Kerrour\*\*\*, A. Khelifa\*\*\*\*, I. Tabet\*\*\*\*\*, H, Haloui, « A Three-Dimensional Modeling of Photovoltaic Thermal Collector», Vol.6, No.2, 2016, ISSN: 1309-0127

**--------------------------------------------------------------------------------------------------------------------------------------------****R. Chenni**, L. Zarour, A. Bouzid and T. Kerbache**Comparative study of photovoltaic pumping systems using a permanent magnet synchronous motor (PMSM) and an asynchronous motor (ASM)**.Revue des Energies Renouvelables. Vol. 9, pp 17 – 28. 2006.**R. Chenni**, M. Makhlouf, T. Kerbache & A. Bouzid**A detailed modeling method for photovoltaic cells**International journal: Energy 32 Elsevier 1724-1730. September 2007E. Matagne, **R. Chenni,** R. El-Bachtiri, **A photovoltaic cell model based on nominal data only,** Proceedings of the International Conference on Power Engineering Energy and Electrical Drives-Powereng, Setubal, Portugal, 12-14 april, ISBN: 1-4244-0895-4, pp. 562-565.Digital Object Identifier:[10.1109/POWERENG.2007.4380173,](http://dx.doi.org/10.1109/POWERENG.2007.4380173) IEEE Conference Publications. 2007I. Zeghib, **R. Chenni** & T. Kerbache**Design and Construction of a Thermal Collector of High Temperature**Journal of Engineering and Applied Sciences 2 (12): 1827-1833, 2007**R. Chenni**, L. Zarour, E. Matagne & T. Kerbache**Optimisation d’un système de pompage photovoltaïque**Revue Sciences et Technologies B – N° 26, décembre 2007.**R. Chenni**, L. Zarour, M. Amarouayache & A. Bouzid**A new design of analogue maximum power point tracker**International Review of Electrical Engineering, Vol 2, February 2008.L. Zarour, **R. Chenni**, A. Borni & A. Bouzid**Improvement of synchronous and asynchronous motor drive systems supplied by photovoltaic arrays with frequency control.**Journal of electrical engineering, JEEEC, Vol. 59, N° 4, pp 169-177. August 2008.**R. Chenni**, E. Matagne & M.Khennane**Study of solar radiation in view of photovoltaic systems optimization**International journal: Smart grid and renewable energy, SGRE, Vol. 2, 367-374, 2011. A. Borni, L. Zarour and **R.** **Chenni****Analysis and simulation of maximum power point tracker of photovoltaic system using fuzzy logic controller.**Journal of electrical energy, Vol. 11; 36-45, 2011R. Merahi et **R. Chenni** **Amélioration de la commande P&O par une détection synchrone du courant de batterie.** Revue des Energies Renouvelables ICESD’11 Adrar pp 113 – 121, 2011Y. Bouzelata, H . Djeghloud and **R. Chenni** **The Application of an Active Power Filter on a Photovoltaic Power Generation System**International journal of renewable energy research Vol.2, No.4, 2012B. Mehimmedetsi & **R. Chenni****Dynamic response of SCIG with Direct Grid Connection**Proceedings of International Conference on Power Engineering, Energy and Electrical Drives, POWERENG-2013, **Istanbul, Turkey, 13 – 17 May 2013.** Publication Year: 2013 , pp 1322 - 1327Digital Object Identifier: [10.1109/PowerEng.2013.6635805](http://dx.doi.org/10.1109/PowerEng.2013.6635805) IEEE Conference Publications, 2013.Nouar Aoun, **Rachid Chenni**, Kada Bouchouicha**Experimental and Validation of Photovoltaic Solar Cell Performance Models in Desert Climate** Applied Mechanics and Materials Vol. 492 (2014) pp 135-142 (ISSN: 1662-7482).© (2014) Trans Tech Publications, Switzerland, doi:10.4028/www.scientific.net/AMM.492.135Mehimmedetsi Boujemaa & **Chenni Rachid****Different methods of modeling a photovoltaic cell using Matlab / Simulink / Simscape.**International Journal of Scientific & Engineering Research, Volume 5, Issue 6, June-2014, pp 671-677. ISSN 2229-5518 IJSER © 2014 <http://www.ijser.org>.[Nouar Aoun](http://www.scirp.org/journal/articles.aspx?searchCode=Nouar+Aoun&searchField=authors&page=1), [**Rachid Chenni**](http://www.scirp.org/journal/articles.aspx?searchCode=Rachid+Chenni&searchField=authors&page=1), [Boukheit Nahman](http://www.scirp.org/journal/articles.aspx?searchCode=Boukheit+Nahman&searchField=authors&page=1" \t "_blank), [Kada Bouchouicha](http://www.scirp.org/journal/articles.aspx?searchCode=Kada+Bouchouicha&searchField=authors&page=1" \t "_blank)[**Evaluation and Validation of Equivalent Five-Parameter Model Performance for Photovoltaic Panels Using Only Reference Data**](http://www.scirp.org/journal/PaperInformation.aspx?PaperID=49560)[**Energy and Power Engineering**](http://www.scirp.org/journal/Home.aspx?JournalID=93) [Vol.6 No.9](http://www.scirp.org/journal/Home.aspx?IssueID=5377), September 10, 2014, pp 235-245. (ISSN: 1947-3818).DOI: [10.4236/epe.2014.69021](http://dx.doi.org/10.4236/epe.2014.69021)N. Aoun, B. Nahman, **R. Chenni** and K. Bouchouicha,**A Detailed Modeling of a Five Parameters Model for Photovoltaic Modules** International Journal of Modern Engineering Research, Vol. 4, pp. 54-59, 2014, (ISSN: 2249-6645).Yahia Bouzelata, Erol Kurt, Necmi Altın & **Rachid Chenni****Design and simulation of a solar supplied multifunctional active power filter and a comparative study on the current-detection algorithms**Renewable and Sustainable Energy Reviews 43, Elsevier (2015) 1114–1126<http://dx.doi.org/10.1016/j.rser.2014.11.095>Yahia Bouzelata, Erol Kurt, **Rachid Chenni** & Necmi Altın**Design and simulation of a unifed power quality conditioner fed by solar energy**International journal of hydrogen energy, Elsevier (2015) 1–11<http://dx.doi.org/10.1016/j.ijhydene.2015.02.077>Arar Hemza, Haouam Abdesselam, **Chenni Rachid**, Marcel Pasquinelli, Damien Barakel**Tracing current-voltage curve of solar panel Based on LabVIEW Arduino Interfacing**International journal of informatics technologies, Vol 8 N° 3 pp 117-123 Bilişim Teknolojileri Dergisi. (2015). ISSN 1307-9697 EISSN 2147-0715, <http://dx.doi.org/10.17671/btd.39450>Merahi Reda & **Chenni Rachid****Control Strategy for DC Bus Voltage Regulation in Photovoltaic System with Battery Energy** International Journal of Engineering Research & Technology (IJERT) Vol. 4 Issue 08, August-2015ISSN: 2278-0181, IJERTV4IS080332.Boudjema Mehimmedetsi and **Rachid Chenni****Modelling of DC PV system with MPPT.**[Proceedings of the 3rd International Renewable and Sustainable Energy Conference (IRSEC)](http://ieeexplore.ieee.org.www.sndl1.arn.dz/xpl/mostRecentIssue.jsp?punumber=7449555)Year: 2015, Pages: 1 - 6, DOI: [10.1109/IRSEC.2015.7455013](http://dx.doi.org.www.sndl1.arn.dz/10.1109/IRSEC.2015.7455013) [Abdelkrim Rachid](http://ieeexplore.ieee.org.www.sndl1.arn.dz/search/searchresult.jsp?searchWithin=%22Authors%22:.QT.A.%20Rachid.QT.&newsearch=true), [Foued Kerrour](http://ieeexplore.ieee.org.www.sndl1.arn.dz/search/searchresult.jsp?searchWithin=%22Authors%22:.QT.F.%20Kerrour.QT.&newsearch=true), [**Rachid Chenni**](http://ieeexplore.ieee.org.www.sndl1.arn.dz/search/searchresult.jsp?searchWithin=%22Authors%22:.QT.R.%20Chenni.QT.&newsearch=true) and [Hind Djeghloud](http://ieeexplore.ieee.org.www.sndl1.arn.dz/search/searchresult.jsp?searchWithin=%22Authors%22:.QT.H.%20Djeghloud.QT.&newsearch=true)[PV emulator based buck converter using dSPACE controller](http://ieeexplore.ieee.org.www.sndl1.arn.dz/document/7555762/)Proceedings of [IEEE 16th International Conference on Environment and Electrical Engineering (EEEIC)](http://ieeexplore.ieee.org.www.sndl1.arn.dz/xpl/mostRecentIssue.jsp?punumber=7547194)Year: 2016, Pages: 1 - 6, DOI: [10.1109/EEEIC.2016.7555762](http://dx.doi.org.www.sndl1.arn.dz/10.1109/EEEIC.2016.7555762).Yahia Bouzelata, Necmi Altın, **Rachid Chenni** & Erol Kurt **Exploration of optimal design and performance of a hybrid wind-solar energy system.**International journal of hydrogen energy, Volume 41, issue 29 Elsevier (3 August 2016) 12497–12551<http://dx.doi.org/10.1016/j.ijhydene.2015.12.165>Boutheina Madaci, **Rachid Chenni**, Erol Kurt and kamal Eddine Hemsas.**Design and control of stand-alone hybrid power system**International journal of hydrogen energy, Volume 41, issue 29 Elsevier (3 August 2016) 12485–12496<http://dx.doi.org/10.1016/j.ijhydene.2016.01.117> |

1. [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)
3. [↑](#footnote-ref-3)