Yasuhiro Matsumoto, Ph.D. April, 2017

Curriculum Vitae
ymatsumo@cinvestav.mx

EDUCATION

1988 - 1990 **Ph.D., Electrical Engineering, Faculty of Engineering Science**
Osaka University (at Toyonaka Campus, Osaka, Japan)
Dissertation: *Fundamental research on a-Si / poly-Si tandem type solar cell*
Advisor: Prof. Yoshihiro Hamakawa

1982 - 1984 **M.S., Electrical Engineering Department**
Research Center for Advanced Studies CINVESTAV-IPN (Mexico City**)**

1978 - 1982 **B.S., Communication and Electronics Engineering,**
Escuela Superior de Ingeniería Mecánica Eléctrica (Mexico City)

RESEARCH AND PROFESSIONAL EXPERIENCE

2014 - 2015 Coordinator of International Relations at CINVESTAV (Mexico City).

2012 - 2014 National Council of Science and Technology (CONACyT); Energy Source National Network leader.
Research: Monitoring and characterization of a grid-connected 60 kW photovoltaic system at CINVESTAV.

2013 (6-months) Stay at the Center of Innovation for Photovoltaic System, Gifu University, Japan as an invited scientist. Profr. Shuichi Nonomura as a host scientist.

2002-2012 **Full-time Professor**
Research Center for Advanced Studies CINVESTAV-IPN (Mexico City)
Research: Catalytical Chemical Vapour Deposition (Cat-CVD) Silicon nitride and oxide related materials. Doped wide-bandgap material. Fabrication of heterojunction mc-Si/c-Si solar cells and TFT´s.
Cat-CVD process for organic-based sources as TEOS for thin film SiCO deposition, and nanocystalline silicon-based materials for optical application.
Fabrication of hybrid organic-inorganic solar cells using P_3HT/n-c-Si.

2001 (9-months) **On Semiconductor SC, Guadalajara Jalisco. (Sabbatical year)**
Research: Electric performance improvement for power semiconductor devices (Ultra-Fast Diode and Thyristors) at the production line.

1999 (2-weeks) Stay at Ritsumeikan University: PV module Field Test and data analysis.
Profr. Hideyuki Takakura as a host scientist.

1995 (3-months) Stay at Electrotechnical Laboratory (ETL) Tsukuba, Japan. (now AIST)
Study for the Electron beam-induced polycrystallization for thin film silicon device process. Dr. Ryuichi Shimokawa as a host scientist.

1994 **Full-time Professor**
Research Center for Advanced Studies CINVESTAV-IPN (Mexico City)
Research: Plasma CVD deposited amorphous silicon oxide, amorphous silicon nitride and their application to a-Si thin film devices as TFT and solar cells. Thermal recrystallization of boron and phosphorus doped amorphous silicon thin films.

1994 (1-month) Stay at Tokyo Institute of Technology (Meguro Campus), Improvement of conversion efficiency and reliability of hydrogenated amorphous silicon based solar cells. Profr. Kiyoshi Takahashi as a host scientist.

1991 - 1994 **Research Associate**
Research Center for Advanced Studies CINVESTAV-IPN (Mexico City)
Research: Plasma CVD deposited amorphous silicon carbide for thin film solar cell and its characterisation.

1988 - 1990 **Research and Development**
Osaka University (at Toyonaka Campus, Osaka, Japan)
Advisor: Professor Yoshihiro Hamakawa
Research: Fundamental studies of a-Si // poly-Si two- and four-terminal tandem type solar cells.

1986 - 1988 **Research Assistance**
Research Center for Advanced Studies CINVESTAV-IPN (Mexico City)
Research: Low-cost single crystalline silicon solar cell pilot production using screen printing processes.

1985 -1986 **Research and Development**
Stay at Osaka University and Kyocera Corp. (Osaka, Shiga and Chiba, Japan)
Research: Photovoltaic system application, amorphous silicon / poly-crystalline-silicon tandem type solar cells. Crystalline silicon solar cell production by using screen printing processes.

1985 **Research Auxiliary**
Research Center for Advanced Studies CINVESTAV-IPN (Mexico City)
Advisor: Professor Juan Luis del Valle
Research: Solar cell production improvement at the 25 kW pilot-plant line.

SPONSORED RESEARCH ACTIVITIES

1. Research grant: "Fabrication and characterization of nanocrystalline-based solar cells" National Council of Science and Technology (CONACyT); Project-47025Y. **Y.Matsumoto** (PI) 2005-2008. Value $ 1,156,000.00 (Mexican pesos)
2. Initial research grant:"Application and characterization of systems for energy generation sources". CONACyT´s Mega-project-54758 **Y.Matsumoto** (PI) 2006-2008. Value $ 100,000.00 (Mexican pesos)
3. Research grant: "Urban solar concentration oven with 6.5kWt of power; clean and sustainable alternative energy", No. 3 ICyT-DF (Instituto de Ciencia y Tecnología del D.F.) R. Asomoza (PI), J.A.Urbano (co-PI), **Y.Matsumoto** (co-PI) 2008-2010. Value $ 450,000.00 (Mexican pesos)
4. Research grant: "Bisnano; Functionalities of Bismuth-Based Nanostructures", CONACyT-125141 vía UNAM, Joint project with the European community. 8 different Institutions, V.Subramaniam (PI) **Y.Matsumoto** (co-PI) 2011-2014. Value $ 339,725.00 (Mexican pesos)
5. Research grant: "Obtention and exploration of the optical properties of nanocrystalline-silicon and its possible application to optoelectronic devices" Project-CB-2009-01 CONACyT -128723. **Y.Matsumoto** (PI), from INAOE: M. Aceves Mijares (co-PI) 2010-2014. Value $ 1,976,000.00 (Mexican pesos)

6. Cooperation grant: National Council of Science and Technology (CONACyT); Energy Source National Network. U0003-2014-2, CONACyT-243831. **Y.Matsumoto** (PI), 2010-2011 value $230,000.00 and 2014-2015. Value $1,400,000.00 (Mexican pesos)

OTHERS

Graduated 7 doctorate, 9 master and 8 undergraduate students.

More than 50 International peer reviewed Journal publications,150 publications in National and International Congresses and 70 invited talks.

Publications– (last 10 peer-reviewed publications)

[1] G. Castillo, J. García, M.A.Reyes, **Y.Matsumoto**, J.A.Moreno, L.M.Flores, "CMOS prototype for retinal prosthesis applications with analog processing"International Journal of Electronics, Vol. 101, No. 12, 1621–1646, (2014)

[2] A. Dutt, **Y.Matsumoto**, S.Godavarthi, G.Santana-Rodríguez, J.Santoyo-Salazar, A.Escobosa, "White bright luminescence at room temperature from TEOS-based thin films via catalytic chemical vapor deposition" Materials Letters 131 (2014) 295–297

[3] S. Godavarthi, C.Wang , P. Verdonck , **Y.Matsumoto**, I. Koudriavtsev, A. Dutt, H. Tielens , M.R. Baklanov, "Study of porogen removal by atomic hydrogen generated by hot wire chemical vapor deposition for the fabrication of advanced low-k thin films" Thin Solid Films 575 (2015) 103–106

[4] J.M. Flores-Marquez, M.L. Albor-Aguilera, **Y. Matsumoto**, M.A. Gonzalez-Trujillo, C. Hernandez-Vasquez, R.Mendoza-Perez, G.S. Contreras-Puente, M. Tufiño-Velazquez. "Improving CdS/CdTe thin film solar cell efficiency by optimizing the physical properties of CdS with the application of thermal and chemical treatments", Thin Solid Films 582 (2015) 124–127

[5] **Y. Matsumoto**, A. Dutt, G. Santana-Rodríguez, J. Santoyo-Salazar and M. Aceves-Mijares, "Nanocrystalline Si/SiO_2 core-shell network with intense white light emission fabricated by hot-wire chemical vapor deposition", Appl. Phys. Let. 106, 171912 (2015)

[6] R. Ortega-Amaya, **Y. Matsumoto**, M.A. Pérez-Guzmán, M. Ortega-López, "In situ synthesis of Cu_2O and Cu nanoparticles during the thermal reduction of copper foil-supported graphene oxide", J. Nanopart Research (2015) 17:397

[7] A. Dutt, **Y. Matsumoto**, J. Santoyo-Salazar, G. Santana-Rodríguez, S. Godavarthi, "Blue to red emission from as-deposited nc-silicon/silicon dioxide by hot-wire chemical vapor deposition", Thin Solid Films 595 (2015) 221-225.

[8] Carlos Norberto, Claudia N. Gonzalez-Brambila, **Yasuhiro Matsumoto**, "Systematic analysis of factors affecting solar PV deployment", Journal of Energy Storage, 6 (2016) 163-172.

[9] Rebeca Ortega-Amaya, **Yasuhiro Matsumoto**, Araceli Flores Conde, Manuel A. Pérez-Guzmán and and Mauricio Ortega-López, "In situ formation of rGO quantum dots during GO reduction via interaction with citric acid in aqueous medium", Mater. Res. Express 3 (2016) 105601

[10] Dutt A, **Matsumoto Y**, Santana-Rodríguez G, Ramos E, Monroy BM, Santoyo Salazar, "Surface chemistry and density distribution influence on visible luminescence of silicon quantum dots: an experimental and theoretical approach, J.Phys. Chem. Chem. Phys., 19 (2017), 1526-1535