Amr Hessein Hassan Ali

Date of Birth: **August, 5, 1984**
Nationality: **Egyptian**
Marital Status: **Married**
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Education

- **Ph.D. in Materials Science and Engineering, 2016**
  - Materials Science and Engineering Department, Egypt-Japan University of Science and Technology, Egypt.
  - Institute of Advanced Energy, Kyoto University, Japan.
  - **Topic**: Developing high performance graphene based electrodes for optoelectronic and electrochemical applications.
  - **Supervisors**: Prof. Ahmed Abd El-Moneim, Prof. Ahmed Fath-Elbab, Prof. Kazunari Matsuda.

- **M.Sc. in Engineering Physics, 2013**
  - Engineering Mathematics and Physics Department, Faculty of Engineering at Shoubra, Benha University, Egypt.
  - **Topic**: Optical Characterization of Semiconductor Nanoparticles for Photovoltaic Performance.
  - Supervisors: Prof. M. Hassan Talaat, Prof. Sohair Negm, Dr. Khalid Essawi.
- **B.Sc. in Electrical Power and Electrical Machines, 2006**
  - Electrical Engineering Department, Faculty of Engineering at Shoubra, Benha University, Egypt.

Research Areas

Synthesis and characterization of semiconductor nanoparticles – Graphene and carbon related materials – Thin film deposition and characterization – Mesoscopic Photovoltaics – Perovskite solar cells – Dye sensitized solar cell – Quantum dot sensitized solar Cell – Thin film photovoltaics – Organic photovoltaics.

Teaching Courses

- Solid State Physics
- Physics of Semiconductor Devices.
- Quantum Mechanics of Solids.
- Spectroscopy.
- Thermodynamics and Heat Transfer.
- Engineering Optics.
- Mechanical Waves and Sound.
- Electrostatics and Electrodynamics.
- Laser and Advanced Optics.
- Magnetic Fields and Electromagnetism.

Technical Skills

Thin film sputtering – Thermal evaporation of thin films – UV-visible Spectroscopic measurements for liquid, solid and thin film samples – Fluorescence measurements – FTIR spectroscopy – Raman scattering – X-Ray diffraction – Scanning Electron Microscope – Electrochemical measurements – Four probe sheet resistivity measurements – Photocurrent-voltage measurements of solar cells – External quantum efficiency (IPCE) measurements .

Employment

- **2016 – present:** Assistant Professor, Engineering Mathematics and Physics Department, Faculty of Engineering at Shoubra, Benha University, Egypt.
- **2013 – 2016:** Ph.D. student, Materials Science and Engineering Department, Egypt-Japan University of Science and Technology, Egypt. & Institute of Advanced Energy, Kyoto University, Japan.
- **2007 – 2013:** Demonstrator for engineering physics, Engineering Mathematics and Physics Department, Faculty of Engineering at Shoubra, Benha University, Egypt.

Publications

[1] **Amr Hessein**, and Ahmed Abd El-Moneim, " Developing Cost Effective Graphene Conductive Coating and its Application as Counter Electrode for CdS Quantum Dot Sensitized Solar Cell" 6TH international conference on nanotechnology: fundamentals and applications (ICNFA'15), July 15 - 17, 2015 Barcelona, – Spain.

[2] **Amr Hessein**, FeiJlu Wang, Hirokazu Masai, Kazunari Matsuda, and Ahmed Abd El-Moneim, "One-step Fabrication of Copper Sulfide Nanoparticles Decorated on Graphene Sheets as Highly Stable and Efficient Counter Electrode for CdS Sensitized Solar Cells", Japanese Journal of Applied Physics (JJAP), vol. 55, pp. 1–8, 2016.

[3] **A. Hessein**, F. Wang, H. Masai, K. Matsuda, and A. A. El-Moneim, "Improving the stability of CdS quantum dot sensitized solar cell using highly efficient and porous CuS counter electrode," J. Renew. Sustain. Energy, vol. 9, no. 2, p. 23504, 2017.

[4] **A. Hessein**, and A. A. El-Moneim, "Controlled synthesis of copper sulfide-reduced graphene oxide counter electrode for high-performance CdS-sensitized solar cell," new carbon materials, 2017 [**in press**].

[5] **A. Hessein**, and A. A. El-Moneim, "Hybrid CuS-PEOT:PSS counter electrode for quantum sensitized solar cell," Superlattices and Microstructures, 2018 [**submitted**].