

## Prof. AYNUR ERAY

### Personal Information

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### Education Information

Doctorate, Hacettepe Üniversitesi, Fen Bilimleri Enstitüsü, Fizik Mühendisliği, Turkey 1982 - 1988

Postgraduate, Hacettepe Üniversitesi, Fen Bilimleri Enstitüsü, Fizik Mühendisliği, Turkey 1981 - 1982

Undergraduate, Hacettepe Üniversitesi, Mühendislik Fakültesi, Fizik Mühendisliği, Turkey 1976 - 1981

### Research Areas

Electrical and Electronics Engineering, Energy, Renewable energy, Physics, Interdisciplinary Physics and Related Science and Technology Areas, Intensive Article 2: Electronic Structure, Electric, Magnetic and Optical Properties, Natural Sciences, Engineering and Technology

### Academic Titles / Tasks

Professor, Hacettepe University, Mühendislik Fakültesi, Fizik Mühendisliği Bölümü, 2003 - Continues

### Academic and Administrative Experience

Hacettepe Üniversitesi, Yeni Ve Temiz Enerji Araştırma Ve Uygulama Merkezi, 2011 - Continues

Hacettepe Üniversitesi, Fen Bilimleri Enstitüsü, 2011 - 2017

Hacettepe Üniversitesi, Mühendislik Fakültesi, Fizik Mühendisliği Bölümü, 2009 - 2012

Hacettepe Üniversitesi, Hacettepe Ankara Sanayi Odası 1. Osb Meslek Yüksekokulu (Silinecek), 2006 - 2012

### Courses

ENJ632 Enerjiye Giriş, Postgraduate, 2017 - 2018

ENJ644 Temiz Tükenmez Enerji Sistemleri, Postgraduate, 2017 - 2018

ENJ631 Mühendislik Matematiği, Postgraduate, 2016 - 2017

ENJ655 ENERJİ MÜH. LAB, Postgraduate, 2016 - 2017

FİZ137 Physics I, Undergraduate, 2016 - 2017

FİZ 103 Fizik Lab. I, Undergraduate, 2016 - 2017

FİZ 307 Termodinamik, Undergraduate, 2016 - 2017

ENJ650 SEMİNER, Postgraduate, 2016 - 2017

### Advising Theses

ERAY A., Merkezi alıcı sistemli (MAS) güneş güç santrali Birecik uygulaması, Postgraduate, M.HEKİM(Student), 2017

ERAY A., AMPS-1D programı kullanılarak güneş gözelerinin bilgisayar modellemesi, Postgraduate, T.OCAK(Student), 2017

ERAY A., Beytepe Güneş Evi'ndeki fotovoltaik sistemin performansının incelenmesi, Postgraduate, A.CİNDARİK(Student), 2016

ERAY A., Fotovoltaik modüllerde gerilim kaynaklı bozulmaların incelenmesi, Postgraduate, T.ALPEREN(Student), 2016

ERAY A., Fotovoltaik güç santrali bağlı bir şebekede güç kalitesi ölçümleri, Postgraduate, Ö.TANRIVERDİ(Student), 2015

ERAY A., Çift eksenli mikrokontrollü güneş izleme sistemi, Postgraduate, M.ANAMERİÇ(Student), 2014

ERAY A., KUTU TİPİNDE GÜNEŞ ENERJİLİ FIRINLARIN TASARIMI VE TEST EDİLMESİ, Postgraduate, E.EMEL(Student), 2014

ERAY A., Stirling çevrimi kullanan çanak tipi yoğunlaştırıcı güç sistemlerinin incelenmesi ve model bir sistemin tasarlanması, Postgraduate, G.ACAROL(Student), 2013

ERAY A., Türkiye iklim koşullarında fotovoltaik güç sistemlerinin tasarımı ve maliyet analizi, Postgraduate, E.KESKİN(Student), 2012

ERAY A., Hidrojenlendirilmiş amorf silikon-kristal silikon heteroeklem güneş gözelerinin bilgisayar modellemesi, Postgraduate, M.BİLGİÇ(Student), 2011

ERAY A., Güneş gözelerinin üretilmesinde son gelişmelerin araştırılması, Postgraduate, G.GÜL(Student), 2008

ERAY A., KARARLI DURUM FOTO TASIYICI GIRISIM DESENİ DÜZENEGİNİN KURULMASI, Postgraduate, T.Öztürk(Student), 2006

ERAY A., Hidrojenlendirilmiş amorf silisyum deneklerde modüle edilmiş fotoiletkenlik ölçümleri, Postgraduate, E.UMUT(Student), 2006

ERAY A., HIDROJENLENDİRİLMİŞ AMORF SILISYUM FILİMLERDE UZAY YÜKÜ İLE SINIRLI AKIM TEKNİĞİ İLE DURUM YOGUNLUGUNUN BELİRLENMESİ, Postgraduate, T.OKAT(Student), 2001

ERAY A., A-Si:H FILİMLERDE ISIL UYARMALI AKIM VE FOTOİLETKENLİK ÖLÇÜMLERİ, Postgraduate, E.TOPÇU(Student), 1996

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **Development of prototype battery management system for PV system**  
Okay K., Eray S., ERAY A.  
Renewable Energy, vol.181, pp.1294-1304, 2022 (Journal Indexed in SCI Expanded)
- II. **Doping-free silicon thin film solar cells using a vanadium pentoxide window layer and a LiF/Al back electrode**  
JUNG H. H. , KWON J., LEE S., KIM C. S. , NAM K., JEONG Y., CHUNG K., RYU S. Y. , OCAK T., ERAY A., et al.  
APPLIED PHYSICS LETTERS, vol.103, no.7, 2013 (Journal Indexed in SCI)
- III. **AMPS-1D modeling of a-Si:H n<sup>+</sup>-i-n<sup>+</sup> structure: The validity of space charge limited current analysis**  
ERAY A., Nobile G.  
Turkish Journal of Physics, vol.28, no.1, pp.31-39, 2004 (Journal Indexed in SCI Expanded)
- IV. **Analysis of the structural parameters of an a-Si : H n(+)-i-n(+ ) structure by numerical simulations**  
Eray A., NOBILE G.  
JOURNAL OF MATERIALS SCIENCE-MATERIALS IN ELECTRONICS, vol.14, pp.735-736, 2003 (Journal Indexed in SCI)
- V. **Evaluation of the density of states parameters of a-Si : H by AC photoconductivity measurements and numerical simulation**  
Eray A., NOBILE G., PALMA F.  
MATERIALS SCIENCE AND ENGINEERING B-SOLID STATE MATERIALS FOR ADVANCED TECHNOLOGY, vol.102, pp.398-402, 2003 (Journal Indexed in SCI)
- VI. **Evaluation of the gap state distribution in a-Si : H by SCLC measurements**  
Eray A., Nobile G.  
SOLAR ENERGY MATERIALS AND SOLAR CELLS, vol.76, no.4, pp.521-528, 2003 (Journal Indexed in SCI)

- VII. **Kinetics of light-induced metastable defect creation and annealing in a-Si:H**  
Kodolbaş A. O. , ERAY A., Öktü Ö.  
Turkish Journal of Physics, vol.26, no.1, pp.33-39, 2002 (Journal Indexed in SCI Expanded)
- VIII. **Effect of light-induced metastable defects on photocarrier lifetime**  
KODOLBAS A., Eray A., OKTU O.  
SOLAR ENERGY MATERIALS AND SOLAR CELLS, vol.69, no.4, pp.325-337, 2001 (Journal Indexed in SCI)
- IX. **Light-induced metastable defects in a-Si : H studied by constant photocurrent method at 120 K**  
KODOLBAS A., Eray A., OKTU O.  
JOURNAL OF NON-CRYSTALLINE SOLIDS, vol.255, pp.132-139, 1999 (Journal Indexed in SCI)
- X. **Growth of Si:H thin films by hot filament CVD: mu-Crystalline to amorphous transition**  
Polini R., Barbarossa V., Minarini C., Eray A., Marucci A., Mattei G.  
ADVANCES IN CRYSTAL GROWTH, vol.203, pp.167-172, 1996 (Journal Indexed in SCI)
- XI. **OPTICAL-ABSORPTION COEFFICIENTS IN A-SI1-XCX-H**  
OKTU O., LAUWERENS W., USALA S., ADRIAENSSENS G., VERBEKE O., ERAY A., TOLUNAY H.  
MATERIALS SCIENCE AND ENGINEERING B-SOLID STATE MATERIALS FOR ADVANCED TECHNOLOGY, vol.11, pp.47-50, 1992 (Journal Indexed in SCI)
- XII. **THE EVALUATION OF MOTT PARAMETERS BY USING THE FIELD-DEPENDENT CONDUCTIVITY IN AMORPHOUS-GERMANIUM**  
ERAY A., TOLUNAY H., OKTU O.  
JOURNAL OF NON-CRYSTALLINE SOLIDS, vol.122, no.2, pp.193-196, 1990 (Journal Indexed in SCI)

## Books & Book Chapters

- I. **Chapter 10 - The Optimization of A-Si:H Pin Solar Cells : More Insight from Simulation**  
ERAY A., Nobile G.  
in: Recent developments in solar energy, Tom Houng, Editor, Nova Science Publishers, Cccnew York, pp.313-334, 2008

## Refereed Congress / Symposium Publications in Proceedings

- I. **Feasibility study of dish/stirling power systems in Turkey**  
ZILANLI G. A. , ERAY A.  
22nd International Conference on Concentrating Solar Power and Chemical Energy Systems, SolarPACES 2016, Abu Dhabi, United Arab Emirates, 11 - 14 October 2016, vol.1850
- II. **An Implementation of CSP With Solar Thermal Tower Power Plant of 10 MW**  
HEKİM m., ERAY A.  
SOLARTR 2016, Abu Dhabi, United Arab Emirates, 6 - 08 December 2016
- III. **A Small Sized Climate Chamber Developed For Potential Induced Degradation Measurement**  
ERAY S., KEŞKÜŞ T. A. , ERAY A.  
SOLARTR2016, 6 December - 08 June 2016
- IV. **Module Based Monitoring System For Beytepe Solar House**  
ERAY S., CİNDARİK A., ERAY A.  
SOLARTR2016, 6 - 08 December 2016
- V. **Potential Induced Degradation For c Si Mini Modules**  
ERAY A., KEŞKÜŞ T. A.  
SOLARTR2016, 6 - 08 December 2016, pp.228-234
- VI. **Simulation of a Si H p i n solar cell using AMPS 1D**  
OCAK T., ERAY A.  
SOLARTR2016, 6 - 08 December 2016

- VII. **Feasibility Study of Dish Stirling Power System in Turkey**  
Acarol Zialnı G., ERAY A.  
SOLARPACES 2016, 10 - 15 October 2016
- VIII. **An Application of Central Receiver System to 10MW Solar Power Plant in Birecik of Urfa Turkey**  
HEKİM m., ERAY A.  
SOLARPACES2016, 6 - 08 December 2016
- IX. **Solar Energy Research at YETAM Hacettepe University**  
ERAY A.  
POLIKOM 2016, İzmir, Turkey, 24 - 26 February 2016
- X. **Development Of A Small Size Climate Chamber For Potential Induced Degradation Measurements**  
KEŞKÜŞ T. A., ERAY S., ERAY A.  
POLIKOM 2016, 24 - 26 February 2016
- XI. **Design And Construction Of Home Made Two Axis Solar Tracking System And Its Performance Evaluation in Beytepe Campus**  
ANAMERİÇ M., ERAY S., ERAY A.  
POLIKOM 2016, 24 - 26 February 2016
- XII. **Designing Of A Pv Monitoring System For Beytepe Solar House**  
CİNDARİK A., ERAY S., ERAY A.  
POLIKOM 2016, 24 - 26 February 2016
- XIII. **Power quality analysis of Hacettepe Technopolis PV system**  
TANRIVERDİ Ö., ERAY A.  
31st European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC 2015), Hamburg, Germany, 14 - 18 September 2015
- XIV. **Simulation Studies on Hydrogenated Amorphous Silicon Solar Cells**  
AKSARI BİLGİÇ m., GIUSEPPE n., ERAY A.  
E-MRS 2015, Lille, France, 11 - 15 May 2015
- XV. **Performance Degradation Of A Si Modules In Beytepe Ankara Climate Conditions**  
ALPEREN KEŞKÜŞ T., CİNDARİK A., GÜLİN ZİLANLI A., ERAY S., ERAY A.  
SolarTR-3 Third Turkish Solar Electricity Conference and Exhibition, Ankara, Turkey, 27 - 29 April 2015
- XVI. **Hacettepe University Renewable Enegies Graduate Program**  
ERAY A.  
Photovoltaic Worksop, Türk-Alman Araştırma, Eğitim ve İnovasyon Yılı 2014 ve AB 7. çerçeveCHEETAH projesi ç, İstanbul, Turkey, 16 - 17 July 2014
- XVII. **Modelling and Optimization of a Si H c Si Heterojunction Solar Cells**  
ERAY A., MELİS a. b.  
26th EU PVSEC, Hamburg, Germany, 5 - 09 September 2011, pp.1497-1502
- XVIII. **Numerical Simulation of a Si H pin solar cell**  
ERAY A., GIUSEPPE n.  
26th EU PVSEC, 5 - 09 September 2011, pp.2519-2524
- XIX. **Computer Controlled Steady State Photo Carrier Grating Setup**  
ERAY S., TÜRKER ö., ERAY A.  
26th EU PVSEC, Hamburg, Germany, 5 - 09 September 2011, pp.241-248
- XX. **Optimization of a-Si: H/c-Si Heterojunction Solar Cells By Numerical Simulation**  
AKSARI M. B., ERAY A.  
Symposium R on Advanced Inorganic Materials and Concepts for Photovoltaics/Spring Meeting of the European-Materials-Research-Society (E-MRS), Nice, France, 9 - 13 May 2011, vol.10
- XXI. **Evaluation of the gap state distribution in a-Si : H by SCLC measurements**  
Eray A., NOBILE G.  
Conference of the NATO Advanced-Study-Institute on Photovoltaic and Photoactive Materials, SOZOPOL, Bulgaria, 9 - 21 September 2001, vol.80, pp.253-256
- XXII. **Light induced effects in a-Si1-xCx:H with low carbon content**

KODOLBAS A., ERAY A., TOLUNAY H., GUNGOR T., ADRIAENSSENS G., OKTU O.

8th International School on Condensed Matter Physics - Electronic, Optoelectronic and Magnetic Thin Films, Varna, Bulgaria, 18 - 23 September 1994, vol.1, pp.644-647

**XXIII. AC theory of constant photocurrent measurement**

Conte G., ERAY A., Nobile G., Palma F.

Proceedings of the 1995 MRS Spring Meeting, San-Francisco, Costa Rica, 18 - 21 April 1995, vol.377, pp.509-514

**XXIV. DENSITY OF LOCALIZED STATES IN GLOW-DISCHARGE A-SI1-XCX-H**

OKTU O., USALA S., ADRIAENSSENS G., TOLUNAY H., ERAY A.

CONF ON PHYSICAL CONCEPTS OF MATERIALS FOR NOVEL OPTOELECTRONIC DEVICE APPLICATIONS, Aachen, Germany, 28 October - 02 November 1990, vol.1361, pp.812-818

## Supported Projects

ERAY A., Project Supported by Higher Education Institutions, Türkiye'de Çanak/Stirling Güç Sistemleri Üzerine Fizibilite Çalışması, 2016 - 2016

ERAY A., Project Supported by Higher Education Institutions, FOTOVOLTAİK MODÜLLERDE GERİLİM KAYNAKLI BOZULMALARIN İNCELENMESİ, 2014 - 2016

ERAY A., Project Supported by Higher Education Institutions, Beytepe Güneş Evi'ndeki Fotovoltaik Sistemin Performansını İncelemesi, 2014 - 2016

ERAY A., TUBITAK Project, a Si H deneklerde Kararlı Durum Fototaşyıcı Girişim Deseni Ölçümleri, 2003 - 2005

## Memberships / Tasks in Scientific Organizations

Fizik Mühendisleri Odası, Member, 2014 - Continues

GÜNDER, Member, 2012 - Continues

Temiz Enerji Vakfı, Board Member, 2000 - 2014

Enerji Bakanlığı Enerji tasarrufu koordinasyon Kurulu, Member, 2000 - 2007

## Citations

Total Citations (WOS):52

h-index (WOS):5

## Scholarships

NATO B2, TUBITAK, 1993 - 1994