

## RESUME

1. Name Surname: OĞUZ ÇELİKEL
2. Title: ASSOC. PROF. DR.

### WORK EXPERIENCE

- 1- Since January 2017 Chief Researcher Scientific and Technical Research  
Council of TURKEY (TUBITAK)-  
Defense Industry Research and  
Development Institute  
(SAGE)

- 
- 2- Inclusion in several military research projects in optics and inertial measurement sensors such as design and development of near IR laser proximity sensor, fused quartz accelerometer and atomic spin gyroscope

March 2002 - January 2017 Senior Researcher Scientific and Technical Research  
Council of TURKEY (TUBITAK)  
National Metrology Institute (UME),  
Fiber Optic Division of Optics Lab.

- 
- 3- In Fiber Optics: Design and construction of several prototypes of the TURKEY's first north finder- Interferometric Fiber Optic Gyroscope (IFOG) with LiNbO<sub>3</sub> and PZT phase modulator, an main part of inertial navigation systems (INS) in space/air/land vehicles as well as tactical and strategic aimed missiles, used for guidance without GPS signal.

An international patent related to fiber optic gyro is accepted and granted by European Patent Office (EPO), USPTO (US Patent and Trademark Office) and JPO (Japan Patent Office)

EP3011270 (B) / JP6162893(B2) / US 9,857,176(B2) 2018(Grant Date)

In Fiber Optics: In order to calibrate loss and distance scales of Optical Time Domain Reflectometers (OTDRs), the construction of the First National Single Mode Fiber Standard in TURKEY. A scientific publication about this topic is in press in journal of "Optics & Laser Technology" placing in Science Citation Index.

In Fiber Optics: In order to calibrate the fiber optic power as traceable to our primary standard, the construction of the fiber optic transfer standard at the communication wavelengths (1310 nm and 1550 nm).

In Optical Radiometry: Absolute measurements of optical power of several lasers in near IR regions lasers by Electrically Substitution Cryogenic Radiometer (ESCR) and Electrically Calibrated Pyroelectric Radiometer (ECPR). To measure the average pulse

energy of the military and pulsed type lasers designed for laser targeting, a new laser energy measurement system and a new measurement method are designed and constructed.

An international patent related to fiber optic gyro is accepted and granted by European Patent Office (EPO), USPTO (US Patent and Trademark Office) and JPO (Japan Patent Office)

EP3097395(B) / JP6263637(B2) / US 9,874,482 (B2) 2018 (Grant Date)

In Optical Radiometry: Design and construction of Differential Spectral Responsivity (DSR) system for measuring External Quantum Efficiency of multijunction solar cell aimed to be used in space applications under the scope of European Metrology and Research Project (EMRP-ENG51). Collaborator countries, together with TURKIYE, are England, Germany, France, Spain, Switzerland and Finland.

In Optical Radiometry: Spectroradiometric measurements in visible and near IR region of em spectrum with grating based spectroradiometers such as spectral optical power distribution, spectral irradiance and spectral radiance measurements as well as derivation of photometric quantities of photometric quantities based on spectroradiometric data.

In Photometry: Characterization of photovoltaic and photoconductive semiconductor detectors. Characterization of photometers with low level illuminance at the order of night vision, extending from  $10^{-5}$  lux to  $10^{-8}$  lux, and photodetector noise measurements.

In Photometry: Total optical flux measurements of LEDs based on the spectral irradiance.

In Digital Electronics: Hardware and software designs of several types of PC and microcontroller (ATMEL8951 based) compatible ADC cards and auxiliary circuits.

Military Research Activity under My Responsibility in TUBITAK-UME:

The experimental determination of electro-optical and noise characteristics of single and segmented photodiodes for semi-active guided rockets manufactured by ROKETSAN in 2005-2006.

Special Research Activities of Fiber Optic Sensors under My Responsibility in TUBITAK-UME:

Design and construction of several Interferometric Fiber Optic Gyroscopes (IFOG)

Characterization of Erbium Doped Fiber Amplifiers (EDFA)

Design and construction of Strain and Temperature Based Optical Frequency Tunable C+L Band Fiber Laser

Optical Low Coherence Reflectometer (OLCR)

July 2001 Technical Member of EMC Turkish Standards Institute (TSI)

4- Control of standards prepared and translated by engineers and attendance for the preparation and translation of standards associated with electromagnetic compatibility in coordination of the relevant laboratories,

in particular fiber optic, fiber cable as well as auxiliary equipment in Turkish Standards Institute

November 1999      M.S. Physics Engineer      Turkish Standards Institute (TSI)

---

- 5- Translation and preparation of various standards, related to electronics components, systems, and in particular fiber optic components, assemblies, prepared by IEC and EN and approved by CENELEC in Electronic Standard Preparation Group and Electromagnetic Compatibility of TSI

1996 – 1998      Technical Service Engineer - Manager  
Optimum Medical Products Co.

---

- 6- Installation, electronic repairing and calibration of many blood analysis instruments such as hematology and spectrophotometric biochemistry instruments, which are controlled with PC and operates in the Hospitals of Turkish Air Force, Turkish Military Forces Medical Academy and both private and public hospitals

December 1996      Apprentice Engineer      Danam Electronics Co.  
Dallas/Texas - USA

---

- 7- Training about of electronic installation, maintenance, repairing design and calibration of Datacell, Excell and HC 5710 Series Blood Analysis Instruments. Assessments on electronic calibration and quality control data belonging to these instruments. Observations on upgrades of EEPROMs and RAMs including low level software. Installations of EEPROMs and RAMs which include renewed software on the PCB of an instrument

1995-1996      Assistant      The University of Ankara,  
Dept of Eng. Physics

---

- 8- Responsibility for Linear and Digital Electronics Laboratories. Applications and design of some transistor amplifiers, low/high and band pass filters, RF oscillators, operational amplifiers and analog multiplexer in linear electronics. Logic gates, registers, data selectors, memory units and in digital electronics

July 1993      Apprentice      Turkish  
Telecommunication Association

---

- 9- Fiber Optic Unit of Special Cables Group of TurkishTelecommunication Association. Splicing and measurement of Fiber Optic Cables by using special tools as Fusion Splicer and Optical Time Domain Reflectometer

Theoretically training on several multiplexing methods such as TDM, FDM and WDM

Optics & Photonics

Ph.D.  
Dept. of Physics

Gebze Institute of Technology,

November 2008

---

- 10-** Field is Optics-Fiber Optics; Design of Open-Loop and All Digital Closed-Loop Interferometric Fiber Optic Gyroscope and Optoelectronic Characterization

Acceptance for Ph.D. program  
Dept of Electrical and

Northeastern University,

Massachusetts / USA

Computer Eng. Boston,

September 2003

---

- 11-** Field is Electromagnetics, Plasma and Optics for fall 2003 semester.

MS Degree in the Dept. of Physics Engineering  
University of Ankara

The

March 1998

---

- 12-** The first student in master science exam in 1994.  
The research thesis on the examination of optical properties of some laser materials and optical data storage by using Hole-Burning and Hole-Filling in optical spectroscopy.  
Average mark : 87.8/100 (3.51)

English Preparation School

Language School of the  
University of Ankara

1995

---

- 13-** English Preparation Stage intensive course  
Average mark: 77/100 (3.08)

BS Degree in the Dept of Physics Engineering

The  
University of Ankara

Sept. 1994

---

- 14-** BS thesis on design and construction of Temperature Control circuit with NiCr-Ni thermocouple, by using OPAMPs and other active and passive circuit elements  
Average mark: 67.64/100 (2.70)

## **INTERNATIONAL PATENTS RELATED TO FIBER OPTIC SENSOR AND LASER**

1-) Patent Title : Dynamically Monitoring the Instantaneous Zero Rotation Rate Voltage of Interferometric Fiber Optic Gyroscope (IFOG)

Patent Number : EP3011270

Application Number: PCT/IB2013/055059

Patent Office Information: WIPO - Geneva /Switzerland

Application Status: Patentability approved by European Patent Office (EPO) with the International Preliminary Examination Report on Patentability, dated on October 02, 2015

USPTO (US Patent and Trademark Office): US 9,857,176(B2)

JPO (Japan Patent Office): JP6162893 (B2)

EPO (European Patent Office): EP3011270 (B)

Own Share of Patent Right: Oguz CELIKEL (100%)

Application Date: June 20, 2013

2-) Patent Title :Fiber Coupled Integrating Sphere Based-Laser Energy Meter and Calibration System Traceable to Primary Level Standards

Patent Number : EP14708324.0

Application number: PCT/IB2014/058513

Patent Office Information: WIPO - European Patent Office, Geneva /Switzerland

Application Status: Patentability approved by EPO with the International Preliminary Examination Report on Patentability, dated on April 13, 2016

USPTO (US Patent and Trademark Office) US 9,874,482 (B2)

JPO (Japan Patent Office) JP6263637(B2)

EPO (European Patent Office), EP3097395(B)

Own Share of Patent Right: Oguz CELIKEL(60%) and Ferhat SAMETOGLU(40%)

Application Date: January 24, 2014

## **RESEARCH PROJECT INFORMATION**

- 1- Project Title: "INVESTIGATION OF MAGNETOOPTIC FARADAY EFFECT ON SENSING COIL OF INTERFEROMETRIC FIBER OPTIC GYROSCOPE"

Project Team:

Dr. Oguz CELIKEL (Project Coordinator)

Assoc. Prof.Dr. Huseyin SOZERI (Researcher)

Dr.Ferhat SAMETOGLU (Researcher)

Supporting Body: Scientific and Technical Research Council of TURKEY (TUBITAK)

Project Code:109T339

Project Budget: 160,000 USD

Project Period:24 Months

- 2- Project Title: "DESIGN OF MULTIFUNCTIONAL COLOR ANALYZER INSTRUMENT"

Project Team:  
 Dr.Ferhat SAMETOGLU (Project Coordinator)  
 Dr. Oguz CELIKEL (Researcher)  
 Supporting Body: Scientific and Technical Research Council of TURKEY (TUBITAK)  
 Project Code:109T266  
 Project Budget: 20,000 USD  
 Project Period:18 Months

3- Project Title: “European Metrology Research Project (EMRP)- ENG51-SolCell: Metrology for Multijunction solar cells”- Collaborator/Partner, 2014-2017.

Project Team:  
 Assoc. Prof.Dr. Oguz CELIKEL (Collaborator Coordinator)  
 Assoc.Prof.Dr. Ferhat SAMETOGLU (Collaborator Coordinator)  
 Supporting Body: European Metrology Research Project (EMRP) Budgeted  
 Project Code:ENG51  
 Project Budget: 170,000 Euro  
 Project Period:36 Months

### HONORS

Inclusion to the 24<sup>th</sup> Edition of Marquis' Who's Who in the World in Science and Engineering

### ENGLISH LEVEL

UDS	87.50/100	(in 2009)
KPDS	75.00/100	(in 2005)
GRE Quantitative	740 / 800	(in 2002)
TOEFL	503	(in 2001)
TWE (Essay rating)	4.5 / 6	(in 2001)

### COMPUTER/SOFTWARE KNOWLEGDE

Good knowledge of C, the embedded software types for AD $\mu$ C847 microcomputer card in C  
 Good knowledge of 8051 core microcontroller hardware and assembler  
 ISA bus, Parallel Port and RS 232 com port protocol programs and applications with 8951 microcontroller

### SCIENTIFIC STUDIES AND DESIGNS

The construction of a prototype of an interferometric fiber optic gyroscope (IFOG) with LiNbO<sub>3</sub> electrooptic modulator

The construction of a prototype of the first national interferometric fiber optic gyroscope (IFOG) with phase modulator (PZT) which is proposed to be used in the navigation systems of air / land vehicles

8951 MCU controlled adjustable current temperature controlled SLD-type laser diode driver module to be used in Interferometric Fiber Optic Gyroscopes (IFOG)

The construction of Michelson Interferometer with 1550 nm centered DFB Laser Source

Interferometric dynamic phase tracking circuit to be used in IFOG applications, operating in lock-in mode with analog multiplexer.

8951 MCU controlled 24 bit serial ADC with Parallel Port Interfaced

8951 MCU controlled 24 bit serial ADC, RS 232 serial interfaced

Computer controlled- 8 channel 8 - bit parallel ISA bus ADC card

Computer controlled-3 channel 24- bit ISA bus ADC card

Modification and redesign of liquid nitrogen cooled IR radiometer

Computer controlled-LED driver current controller

PUBLISHED SCIENTIFIC PUBLICATIONS in SCIENCE CITATION INDEXED and ESPACENET / PATENTSCOPE

1- "Determination of Attenuation Coefficients of Single Mode Optical Fiber Standards to be used in OTDR Calibrations" - Oğuz ÇELİKEL\*, Mehmet KÜÇÜKOĞLU, Murat DURAK, Farhad SAMEDOV"

Optics & Laser Technology, (2004) 37, 420-426

2- "Cryogenic radiometer based absolute spectral power responsivity calibration of integrating sphere radiometer to be used in power measurements at optical fiber communication wavelengths" - Oğuz ÇELİKEL\*, Özcan BAZKIR, Mehmet KÜÇÜKOĞLU, Farhad SAMEDOV

Optical and Quantum Electronics, (2005) 37, 529-543

3- "Mode Field Diameter and Cut-off Wavelength Measurements of Single Mode Optical Fiber Standards Used in OTDR Calibrations" - Oğuz ÇELİKEL

Optical and Quantum Electronics, (2005) (37), 587-604

4- "Realization of Relative Responsivity Scale with the Electrically Calibrated Pyroelectric Radiometer" - Özcan BAZKIR\*, Oğuz ÇELİKEL, Farhad SAMEDOV

Optics & Laser Technology, (2007), (39) 189- 195

5-"Establishment of a computer-controlled retroreflection measurement system at the National Metrology Institute of Turkey UME" - Farhad SAMEDOV\*, Oğuz ÇELİKEL, Özcan BAZKIR

Review of Scientific Instruments, 76 (9): Art. No. 096102 (SEP 2005)

6- "Construction and Characterization of Interferometric Fiber Optic Gyroscope (IFOG) with Erbium Doped Fiber Amplifier (EDFA)"- Oğuz ÇELİKEL

Optical and Quantum Electronics, (2007) 39: 147-156

7- "Establishment of All Digital Closed-Loop Interferometric Fiber Optic Gyroscope and Scale Factor Comparison for Open-Loop and All Digital Closed-Loop Configurations"- Oğuz ÇELİKEL\* and S. Eren SAN

IEEE Sensors Journal, (2009) Vol.9, No:2, 176-186

8- "Design Details and Characterization of All Digital Closed-Loop Interferometric Fiber Optic Gyroscope with SLED" - Oğuz ÇELİKEL\* and S. Eren SAN

Optical Review, (2009) Vol.16, No:1, 1-9

9- "Establishment of a computer controlled retroreflection measurement facility to characterize photometric properties of retroreflectors" - Ferhat SAMETOĞLU\* and Oğuz Çelikel

Measurement, (2009) Vol. 42, 757-763

10- "All Digital Closed-Loop Interferometric Fiber Optic Gyroscope with Erbium Doped Fiber Amplifier (EDFA)"- Oğuz Çelikel\* and S.Eren SAN

Indian Journal of Pure & Applied Physics, Vol. 47, July 2009, pp. 491-500

11- "Earth Rotation Rate Measurement with North Finder Interferometric Fiber Optic Gyroscope (IFOG) with LiNbO<sub>3</sub> Phase Modulator" Oğuz ÇELİKEL\*, Ferhat SAMETOĞLU, Hüseyin SÖZERİ

Indian Journal of Pure & Applied Physics, Vol. 47, July 2010, pp. 375-384

12- "Application of vector modulation method to North Finding Capability Gyroscope as a Directional Sensor" Oğuz ÇELİKEL

Measurement Science & Technology, Vol 22, March 2011, doi:10.1088/0957-0233/22/3/035203.

13- "Design and characterization of an optical light source based on mixture of white and near-ultraviolet light emitting diode spectra"- Ferhat SAMETOĞLU\* and Oğuz ÇELİKEL

Review of Scientific Instruments, Vol 82, 2011, doi:10.1063/1.3584870.



14- "Assessment of magneto-optic Faraday effect-based drift on interferometric single-mode fiber optic gyroscope (IFOG) as a function of variable degree of polarization (DOP)" - Oğuz ÇELİKEL\* and Ferhat SAMETOĞLU

Measurement Science & Technology, Vol 23, pp:1-17, Feb. 2012, doi:10.1088/0957-0233/23/2/025104.

15- "Design Details of Multi-Functional Color Analyzer for Reflective, Transmittive and Emittive" - Ferhat SAMETOĞLU\* and Oğuz ÇELİKEL

MAPAN-Journal Metrology Society of India, Volume 27, 2012,Page 149-158.

16- EP3011270- "Dynamically Monitoring the Instantaneous Zero Rotation Rate Voltage of Interferometric Fiber Optic Gyroscope (IFOG)", Oğuz ÇELİKEL.

- 46 page-Patent Document.
- PCT Filing Date 20.06.2013.

17- EP3097395 -"Fiber Coupled Integrating Sphere Based-Laser Energy Meter and Calibration System Traceable to Primary Level Standards", Oğuz ÇELİKEL\* (%60) and Ferhat SAMETOĞLU(%40).

- 72 page-Patent Document.
- PCT Filing Date 24.01.2014.

18-) "A differential spectral responsivity measurement system constructed for determining of the spectral responsivity of a single-and triple-junction photovoltaic cells", Ferhat SAMETOĞLU\*, Oğuz ÇELİKEL, and Florian WITT

EPJ Applied Physics Volume 80, Issue 2, 1 November 2017, Article number 21001.

#### NATIONAL AND INTERNATIONAL SCIENTIFIC SYMPOSIUM AND CONGRESS PRESENTATIONS

1-) IMEKO 2<sup>nd</sup> International Symposium in Measurement 2004- Germany.  
"Improvements of in the Optical Measurements Using Laser Stabilization Optics"

2-) 5<sup>th</sup> National Lighting Congress  
"The Establishment of Measurement System Directed To Determine The Photometric Properties of Retroreflective Materials"

3-) 20<sup>th</sup> Congress of the International Commission for Optics (in 21-26, August 2005 Changchun, China) "Establishment of spectrophotometric standards based on InGaN based white LEDs"

4-) 6<sup>th</sup> Congress of Measurement Science October 17-18 2005 Eskişehir-TURKEY  
"The construction of Single Mode Optical Fiber Standards to be used in OTDR calibrations"

## **REVIEWER in SCIENCE CITATION INDEXED JOURNALS**

- 1-) Measurement Science and Technology
- 2-) Review of Scientific Instruments
- 3-) The Arabian Journal for Science and Engineering B: Engineering
- 4-) Journal of Zhejiang University Science C (Computers & Electronics)
- 5-) IEEE Sensors Journal
- 6-) Optics Letters
- 7-) Applied Physics Letters

## **EDITOR in SCIENCE CITATION INDEXED JOURNAL**

Turkish Journal of Electrical Engineering and Computer Sciences

### **ADDITIONAL INFORMATION**

Date of birth is Jan 01, 1973.

Place of birth is Ankara.

I am married with DEFNE and have two sons, their names are TÜRKALP (17 years old) and ATABERK (10 years old).

Military service completed as tank officer in 1999.

## **REFERENCES**

Assoc.Prof.Dr. Erhan AKSU  
Head of Technology Section of Atomic Energy Association of TURKEY (TAEK)  
Sarayköy / ANKARA  
E-mail: eaksu@taek.gov.tr

Assoc.Prof.Dr. Ferhat SAMETOGLU  
TUBITAK UME Gebze / Kocaeli  
E-mail: ferhat.sametoglu@tubitak.gov.tr