

Kemal Efe ESELLER, Ph.D.

Assistant Professor

EDUCATION

- 2009** **Doctor of Philosophy in Engineering Physics**
Mississippi State University, Starkville, MS
- 2008** **Master of Science in Physics (Dual Degree Program)**
Mississippi State University, Starkville, MS
- 2000** **Bachelor of Science in Engineering Physics,**
Hacettepe University, Ankara, Turkey

QUALIFICATIONS

- Laser Induced Incandescence, Laser Induced Breakdown Spectroscopy, Laser Material Interaction, Laser Induced Florescence
- Laser Ablation (LA) ICP MS, LA ICP OES, Mass Spectrometry (MS), Ion Mobility Spectrometry (IMS)
- Design and development of laser based spectroscopic sensors with Labview, Matlab, Autocad, Visual C++, Visual Basic
- Optical data analysis and data simulation with Matlab

WORK EXPERIENCES

- 09/13- :** **Atilim University, Assistant Professor, Ankara, TURKEY**
- 03/12- :03/13:** **Application Research Scientist, Applied Spectra, Fremont, CA, USA**
- Material defect analysis, depth profiling on metal alloys.
 - Laser Spectroscopic hardware design and manufacturing spectroscopic tools for material analysis.
 - Laser material interactions within different environments.
- 07/11-03/12:** **Post-Doctoral Research Associate at International Forensic Research Institute, Florida International University, Miami, FL, USA**
- Performing research on Non-Matrix-Matched standard materials with Laser Ablation-Laser Induced Breakdown Spectroscopy (LA-LIBS) for forensic analysis.
 - Developing Low Temperature Plasma (LTP) Ion Mobility Spectroscopy (IMS) for detection of TNT and C4 explosive materials.
- 01/10-07/11:** **Research Scientist at Mississippi Ethanol LLC, (Mississippi State University, Institute for Clean Energy Technology), Starkville, MS, USA**
- Performing research and development, on non-intrusive, on-line, simultaneous multi-species impurity monitor in Hydrogen gas.
 - Developing compact LIBS system which performs detection limits of N₂, He, Ar, and O₂ impurities in ppm range with Labview software control.
 - Monthly STTR NASA project reports performed.
- 01/06-12/09:** **Research Assistant at Mississippi State University, Starkville, MS, USA**
- Conducting research on soot particle measurements in rocket engine plume by Laser Induced Incandescence (LII) for propulsion testing at The NASA Stennis Space Center (SSC).
 - Developing ungated miniature Laser Induced Breakdown Spectroscopy (LIBS) based sensor for studying biodiesel which is an environmentally friendly possible alternative to fossil fuels.
- 08/05-12/05:** **Teaching Assistant at Mississippi State University, Starkville, MS, USA**
- Teaching Electromagnetics Laboratory course for Engineering undergraduate students.
- 2001:** **Trainee at Electrotechnical Laboratory, Tsukuba, Japan.**
- Designed and fabricated SQUID magnetometers.
 - Magnetic properties of Nb superconducting instruments were investigated.

PUBLICATIONS (SCI)

1. **Kemal E. Eseller**, Fang Y. Yueh, and Jagdish P. Singh, "Laser-induced breakdown spectroscopy measurement in methane and biodiesel flames using an ungated detector", *Applied Optics*, Vol. 47, No. 31, 2008
2. Markandey M. Tripathi, **Kemal E. Eseller**, Fang-Yu Yueh and Jagdish P. Singh, "Multivariate calibration on LIBS spectra for analysis of plutonium oxide surrogate residue" *Spectrochim Acta Part B*, Volume 64, 11-12, 2009
3. **Kemal E. Eseler**, Markandey M. Tripathi, Fang-Yu Yueh, and Jagdish P. Singh, "Elemental analysis of slurry samples with laser induced breakdown spectroscopy", *Applied Optics*, Vol. 49, 13, 2010
4. **Kemal E. Eseller**, Fang-Yu Yueh, and Jagdish P. Singh, "Non-Intrusive, On-line, "Simultaneous Multi-Species Impurity Monitoring in Hydrogen Using LIBS", *Applied Physics B*, *Applied Physics B*, 102, 4, 963, 2011
5. **Kemal E. Eseller**, Fang-Yu Yueh, and Jagdish P. Singh, "Helium Impurity Detection in Mixture of Gas with LIBS", *Applied Optics*, Vol. 51, 7, 171, 2012.
6. Markandey M. Tripathi, **Kemal E. Eseller**, Fang-Yu Yueh, Jagdish P. Singh, "An optical sensor for multi-species impurity monitoring in hydrogen fuel" *Sensors and Actuators B: Chemical Volumes 171–172*, August–September 2012, Pages 416–422.
7. **Kemal E. Eseller**, Fang-Yu Yueh, Jagdish P. Singh, "Hydrocarbon Soot Imaging in Premixed Flame and Soot Generator with Laser Induced Incandescence", (Submitted to *Optical Engineering* submitted).

RESEARCH REPORTS

1. **Kemal E. Eseller**, Jagdish P. Singh and Fang-Yu Yueh, "Non-Intrusive, On-line, Simultaneous Multi-Species Impurity Monitor in Hydrogen" NASA Contract No: NNX08CD53P, January 2009
2. **Kemal E. Eseller**, Jagdish P. Singh and Fang-Yu Yueh, "Hydrocarbon Rocket Engine Plume Imaging with Laser Induced Incandescence", NASA Contract No: 05-i T9.01-9993, January 2007

CONFERENCE PAPERS

1. **Kemal E. Eseller**, Vivek Dikshit, Fang-Yu Yueh, Jagdish P. Singh "Detection of Helium Impurity in Hydrogen Gas with Laser Induced Breakdown Spectroscopy", 6th International Conference on LIBS, 12-17 September 2010, Memphis, TN, USA
2. **Kemal E. Eseller**, Fang-Yu Yueh, and Jagdish P. Singh, Multi-Species Impurity Detection in Hydrogen with Laser Induced breakdown spectroscopy, 5th International Conference On Laser-Induced Breakdown Spectroscopy, 22-26, September 2008, Berlin, Adlershof, Germany
3. **Kemal E. Eseller**, Fang-Yu Yueh, Jagdish P. Singh, "Laser Induced Incandescence for Soot Imaging", The 1st Energy-Synergy Workshop, April 17, 2008, Mississippi State University
4. **Kemal E. Eseller**, Fang-Yu Yueh, and Jagdish P. Singh, "Study of Bio Oil Combustion Using Laser Spectroscopy Laser Applications to Chemical", International Conference on Security and Environmental Analysis (LACSEA), St.Petersburg,FL USA, March 16, 2008
5. **Kemal E. Eseller**, Fang-Yu Yueh, Jagdish P. Singh, Robert L. Cook, William St. Cyr, "Soot Imaging of Bio Diesel with Laser Induced Incandescence", International Conference on Laser Diagnostics In Combustion, Magdalen College, Oxford, United Kingdom, August 12-17, 2007
6. **Kemal E Eseller**, Fang Y. Yueh, Rajamohan R. Kalluru, Jagdish P. Singh, Olin P. Norton, and Robert L. Cook, "Soot Measurement In A Hydrocarbon Rocket Engine With Laser Induced Incandescence", Oral Presentation, Mississippi Academy of Sciences, Starkville, Mississippi, February 21-23, 2007.
7. **Kemal E. Eseller**, Fang-Yu Yueh, Jagdish P. Singh, Olin Perry Norton, Robert L. Cook and William St. Cyr; "Hydrocarbon Rocket Engine Plume Measurement with Laser Induced Incandescence", 38th AIAA Plasmadynamics and Laser Conference, Miami, FL USA June 25-28, 2007.

AWARDS

Magna Cum Laude Honors

AFFILIATIONS

Member of OSA (Optics Society of America):

REFERENCES

- Prof. Dr. Rick Russo
Email: rerusso@lbl.gov
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