

## Curriculum Vita

Herve Keng ne Sanghapi, Ph.D.

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### EDUCATION:

Ph.D. in Engineering with concentration in Applied Physics, May. 2017, **Mississippi State University, Mississippi, USA**

M.Sc. in Physics, Dec. 2014, **Mississippi State University, Mississippi, USA**

B.Sc. in Physics/Computer Science, Dec. 2007, **University of Buea, Buea Cameroon**  
 Experimentation for Improvement Certificate earned on March 4, 2017 by **McMaster University on Coursera.**

Designing, Running, and Analyzing Experiments Certificate earned on February 13, 2017 by **University of California, San Diego on Coursera.**

### PROFESSIONAL APPOINTMENTS:

Assistant Professor of Physics (Tenure Track), Department of Chemistry and Physics, Alcorn State University, Lorman, MS, USA. 2017 - Present

Research Associate, Oak Ridge Institute for Science and Education (ORISE)/ National Energy Technology Laboratory, Pittsburgh, Pennsylvania 2015-2016

### AFFILIATIONS AND HONORS:

- APS (American Physical Society), member.
- OSA (The Optical Society of America), member.
- SAS (Society of Applied Spectroscopy), member.
- NASLIBS (North American Society for Laser-Induced Breakdown Spectroscopy), life member.
- NSBP (National Society of Black Physicists), member.
- Applied Physics B (Lasers and Optics), reviewer.
- Optics Letters, reviewer.
- Optics Express, reviewer.
- Biomedical Optics Express, reviewer.
- Analytical Chemistry, reviewer.
- The Oak Ridge Institute for Science and Education Fellowship 2015-2016.
- Graduate Teaching Assistantship, Mississippi State University 2010-2014, 2016-2017.
- Attestation [translator/interpreter (French-English) for The Cochran Fellowship program on Climate Smart Agriculture] from International Institute of Mississippi State University. August 2016.
- First Place Oral Professional Awards (5<sup>th</sup> Annual Symposium Alcorn State University), 2019.

### EXPERIENCE:

- 08/18-present Assistant Professor of Physics, Department of Chemistry and Physics, Alcorn State University, Lorman, MS, USA.
- Teach physics courses and laboratories.
  - Developing the undergraduate program in Biophysics. The goal of this program is to better serve underrepresented minorities by offering them a more professional career and increase their number in STEM disciplines.
  - Establishing a Laser Spectroscopy and Material Characterization Research Group. Research will use laser-induced plasma for the elemental characterization of materials applicable but not limited to biological samples, environmental monitoring, geological samples, forensics, military

applications like detections of explosives or aerosols, and nuclear applications (detection of nuclear elements).

- Study the elemental characterization of CO<sub>2</sub> brine and cap-rock interaction using laser-induced breakdown spectroscopy. Mainly, the variation of the trace elements before and after injection of CO<sub>2</sub> will be study by means of laser induced breakdown spectroscopy. This study will be proposed for post carbon sequestration as a means to monitor the degradation of the host-rock and prevent eventual leakage. Since LIBS uses the principle of optical emission and the storage environment is hostile and hard to reach, this study will serve advances in developing sensor, based on fiber optic system to monitor the effect of subsurface CO<sub>2</sub> on the host-rock.

02/15-02/16 Research Associate, National Energy Technology Laboratory, Pittsburgh, PA, USA

- Worked in the Material characterization and laser spectroscopy laboratory. Fully involved in the study of the feasibility of LIBS for simultaneous multi-elemental analysis of slags and shale samples.
- Worked on the development of a prototype passively Q-switched Nd:YAG laser for LIBS analysis.
- Fully involved in the setup the optical bench for automation and acquisition of data from underwater LIBS plasma, using pulsed laser, optical devices, computer, LabView and ECCD Camera.
- Successfully setup the optical bench for analyzing rare earth sample from LIBS plasma.
- Used multivariate data analysis software like Unscrambler and Origin pro to analysis data. Carried literature review and participate in scientific write up.

01/13-05/17 Ph.D. student, Department of Physics and Astronomy/ Institute for Clean Energy Technology, Mississippi State University, MS, USA

- Fully involved in the optimization of experimental parameters such as laser, gate delay and gate width for the improvement of the quality of plasma diagnostics using LIBS technique.
- Trained new group members. I introduced them to LIBS theory, experimental setup and troubleshooting. Training also focused on various software and how to calibrate spectrometers, sample preparation, data collection and how to perform data analysis using multivariate analysis techniques.
- Worked on elemental characterization using laser-induced breakdown spectroscopy (LIBS) of various materials.

08/10-01/13 Master's student, Mississippi State University, MS, USA

- Fully involved in the optimization of experimental parameters such as laser, gate delay and gate width for the improvement of the quality of plasma diagnostics using LIBS technique.
- Trained new group members. I introduced them to LIBS theory, experimental setup and troubleshooting. Training also focused on various software and how to calibrate spectrometers, sample preparation, data collection and how to perform data analysis using multivariate analysis techniques.
- Worked on elemental characterization using laser-induced breakdown spectroscopy (LIBS) of various materials.
- Teaching assistant for undergraduate physics (laboratory courses and tutoring).

## **PUBLICATIONS:**

### **Textbook:**

1. **Herve Sanghapi** et al. "Chapter 1. Laser-Induced Breakdown Spectroscopy: Application to Powder Samples" *Advances in Applied Spectroscopy: Concepts and Techniques*. Nova Science Publishers, Inc., 2017. 1-34. ISBN: 978-1-53612-439-2

**Peer-reviewed articles:**

1. Alfarraj, B. A., **Sanghapi, H. K.**, Bhatt, C. R., Yueh, F. Y., & Singh, J. P. Qualitative Analysis of Dairy and Powder Milk Using Laser-Induced Breakdown Spectroscopy (LIBS). *Applied spectroscopy*, 72(1), 89-101. 2018
2. C. G. Carson, C. L. Goueguel, **H. Sanghapi**, J. Jain, and D. McIntyre, "Evaluation of a commercially available passively Q-switched Nd:YAG laser with LiF: F- 2 saturable absorber for laser-induced breakdown spectroscopy," *Opt. Laser Technol.*, vol. 79, pp. 146–152, 2016.
3. **H. K. Sanghapi** et al. "Determination of Elemental Composition of Shale Rocks by Laser Induced Breakdown Spectroscopy." *Spectrochim. Acta Part B At. Spectrosc.*, vol. 122, pp. 9–14, 2016
4. **H. K. Sanghapi** et al. "Analysis of slags using Laser Induced Breakdown Spectroscopy," *Spectrochim. Acta Part B At. Spectrosc.*, vol. 115, pp. 40–45, 2015.

**Conferences:**

1. **Herve K Sanghapi**, Jagdish P Singh "Laser Induced Spectroscopy for Quantitative Analysis of Trace Elements in High Pressure CO2 Enriched Water: An Application to Carbon Sequestration" PITTCON 2017, March 5-9, 2017, McCormick Place, Chicago, IL.
2. Bader Alfarraj, **Herve K Sanghapi**, Chet R Bhatt, Fang Y Yueh, Jagdish P Singh "Qualitative Analysis of Mineral Elements in Milk Powders Using Laser-Induced Breakdown Spectroscopy (LIBS)" PITTCON 2017, March 5-9, 2017, McCormick Place, Chicago, IL.
3. Christian Goueguel; Dustin McIntyre; Jinesh Jain; Cantwell Carson; **H. K. Sanghapi** "Effect of CO2-laden brine temperature, pressure and salinity on the temperature, electron density and morphology of laser-induced underwater plasma, and implications for groundwater monitoring in geological CO2 sequestration." *SciX- NASLIBS FIX 2015, Sep 27th - Oct 2nd, 2015, Providence, Rhode Island*).
4. **H. K. Sanghapi et al.** "Determination of Elemental Composition of Shale Rocks by Laser Induced Breakdown Spectroscopy. *SciX-NASLIBS FIX 2015, Sep 27th- Oct 2nd, 2015. Providence, Rhode Island*).
5. **H. K. Sanghapi et al.** "Analysis of slags using Laser Induced Breakdown Spectroscopy (*Sep 8th – Sep 12th, 2014 / The 8th International Conference on Laser Induced-breakdown Spectroscopy (LIBS 2014)-Beijing China*).
6. Krishna K. Ayyalasomayajula, **H. K. Sanghapi**, Bader Alfarraj, Fang Y. Yueh, Jagdish P. Singh and Dustin L. McIntyre, "Comparative study of Laser Induced Breakdown Spectroscopy (LIBS) and Laser Ablation Molecular Isotopic Spectroscopy (*LAMIS*", *SciX –NASLIBS 2013, Sept 29th - Oct 4th, 2013, Milwaukee, WI*).