Rayan AlAssaad

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OBJECTIVES

Seeking an engineering career in Optical Metrology Research.

EDUCATION

01/03-05/05
- ✓ University of Texas at Dallas, Richardson, Texas.
  PhD in Electrical Engineering, Overall GPA 3.8

01/00-12/03
- ✓ University of Texas at Dallas, Richardson, Texas.
  Master of Science in Electrical Engineering, Overall GPA 3.8

08/95-08/98
- ✓ Lebanese American University, Lebanon.
  Bachelor of Science in Computer Science, Overall GPA 3.5

EXPERIENCE

09/00-12/03
05/05-12/05
Research Assistant in The Optical Instrumentation Lab at the University of Texas at Dallas. Projects include:
- ✓ Scatterometry instrumentation design and data analysis for critical dimension optical metrology in semiconductor processing.
- ✓ Angular scatterometer development and data acquisition.
- ✓ Visible light metrology for nanometer dimensions.
- ✓ Measurement theory: information content analysis and error reduction for measurement data.
- ✓ Inverse linear problem solution techniques applied to scatterometry.
- ✓ Diffractive optical elements design and modeling using the Rigorous Coupled Wave Theory.
- ✓ Novel phase gratings design and modeling for new effective index materials with applications to cavity mirrors (DBR) in VCSELs, spectral filters, and negative index materials.

09/04-05/05
Teaching Assistant for undergraduate Electrical Engineering courses at The University of Texas at Dallas. Courses include:
- ✓ Electronics Circuits Lab.
- ✓ Electronics Devices.

01/97-12/99
Computer Programmer at BAB INTERNATIONAL for contracting and trading, Lebanon:
- ✓ Software development and programming: ORACLE database design and programming for municipalities automated system.

SKILLS

- ✓ Optical material and devices: theory, modeling, design and fabrication.
- ✓ Optical Diffraction: electromagnetic and scalar theories:
- ✓ Optical instrumentation design and optimization.
- ✓ Measurement data analysis: Ellipsometer, Spectrometer, Reflectometer.
- ✓ Programming languages: Matlab, C, databases.

PUBLICATIONS

- ✓ "Profile parameters accuracy determined from scatterometric measurements,"
  Rayan M. Al-Assaad, E. M. Drege, D. M. Byrne,
  Proc. SPIE Vol. 4692, 2002, pp 17-28.
- ✓ "Mathematical analysis of inverse scatterometry,"
  E. M. Drege, Rayan M. Al-Assaad, D. M. Byrne,
  Proc. SPIE Vol. 4689, 2002, pp 151-162.
- ✓ "Error analysis in inverse scatterometry I: Modeling,"
  Rayan M. Al-Assaad, D. M. Byrne,
  JOSA, (in print).
- ✓ "Error analysis in inverse scatterometry II: Optimization,"
  Rayan M. Al-Assaad, D. M. Byrne,
  JOSA, (in print).
- ✓ "Information content analysis in scatterometry,"
  Rayan M. Al-Assaad, D. M. Byrne,
  JOSA, (in print).

REFERENCES

- ✓ Dr. Dale Byrne, Professor, Electrical Engineering Department at the University of Texas at Dallas.
  972-883-2979
  byrne@utdallas.edu

- ✓ Neal Skinner, Senior Scientist Advisor, Halliburton, Carrollton, TX.
  972-418-3058
  neal.skinner@halliburton.com

- ✓ Michael Bates, Imaging Specialist, Nikon Instruments Inc., Austin, TX.
  214-629-7156
  mbates@nikon.net