

## Professional Resume

### Claudia Navarro Northrup

Senior Engineer I

### Specialization

Finite Element Analysis; Mesh Generation for FEA; Structural Dynamics; Crashworthiness and Transportation Safety; Lasers; Optics; Vacuum Systems; Laser-Induced Breakdown Spectroscopy; Raman Spectroscopy; Optical Filters..

### Registration

None.

### Education

MSE in Aerospace Engineering, The University of Texas at Austin, 2003

BS in Applied Mathematics, Chapman University, 2000

Study Abroad in Mechanical Engineering, The University of Edinburgh, Scotland, 1998-1999

### Experience

Feb. 2004 - Present:

Applied Research Associates, Silicon Valley Office of Southwest Division (Mountain View, California), Senior Engineer I

*Current Finite Element Tasks:* Support finite element analysis projects from mesh generation (Truegrid) through running solver (LS-DYNA) and postprocessing. Project topics have included nonlinear dynamic structural behavior, fracture and failure of materials, high-speed penetration mechanics, crashworthiness of vehicles, road structure analysis, analysis of anthropomorphic test dummies (ATD) used in crash testing of automobiles, including injury assessment of ATD's, and assessing the dynamic response of structures due to impact and explosive load. Created application to map loads from 3d hydrocode (SHAMRC) to FEA solver (LS-DYNA).

*Other Previous Tasks:* Supported computational fluid dynamics projects from mesh generation (Truegrid) through running solver (Acusim), including creating and implementing user defined functions to simulate complex mesh motions, and post processing. Development of laser-induced breakdown spectroscopy (LIBS) instruments for stand-off detection of nuclear and radiological materials. Tasks included basic research, laboratory proof of concepts, component testing,

instrument development, and field-like testing. Field support of impact testing of aircraft components. In charge of overseeing tests and complying with customer requirements. Compiled the necessary data into a format acceptable to the customers and FAA. Have led and supported marketing efforts including interacting with the customer and preparing proposals. Other office tasks have included keeping track of project budgets and maintaining office website.

September 2000 – January 2004:

The University of Texas at Austin, Graduate Research Assistant

Used Raman Spectroscopy in the detection of isotope ratios. Took an existing optical setup and modified it for the detection of Carbon Dioxide isotope ratios using a tunable diode laser array in Littman-Metcalf configuration and an atomic vapor absorption cells. Investigating the application and development of medical instrumentation using the Raman Scattering process. The project included a research demonstration at Wagner Analysen Technik (Bremen, Germany), for application in company's Infrared Isotope Analyzer currently used for medical breath tests abroad. The experimental components were taken to Germany and assembled there to demonstrate capabilities (Aug. 2003).

Summers of 1997-1999:

The Boeing Co., C-17 Program (Long Beach, California), Summer Intern

*Summer 1999:* Assisted in project management activities including developing project schedules and coordinating functional organizations with information systems implementation. Generated dynamic Oracle SQL scripts to load production system security tables utilizing Microsoft Access programming tools. Assisted in data investigations and reporting utilizing Oracle database development tools.

*Summer 1998:* Completed the Computer Based Training module in Unigraphics v 13.01 (Development). Created imbedded quality software functionality into computer aided design engineering tools using Unigraphics v. 13.01.

*Summer 1997:* Mastered internal database auditing system. Reviewed, tested, and recommended alternate audit software systems. Assisted in design of 5-year Quality Vision Plan.

## **Honors and Recognitions**

Received bachelor's degree Magna cum Laude and with Departmental Honors  
Chapman University Presidential Scholar and Dean's List  
Chapman University Honors Program  
Who's Who Among Students in American Universities and Colleges  
Selected for Proctor & Gamble IT Winter Course in New Castle, England

## Affiliations

Optical Society of America

## Selected Publications

1. Radziemski, L.J., D.A. Cremers, M. Bostian, R.C. Chinni, C. Navarro-Northrup, "Laser-Induced Breakdown Spectra in the Infrared Region from 750 to 2000 nm Using a Cooled InGaAs Diode Array Dector," *Applied Spectroscopy*, v. 61, No. 11, 2007.
2. Oakley, O.H., S. Holmes, Y. Constantinides, C. Navarro, "Modeling Vortex Induced Motions of Spars in Uniform and Stratified Flows," Proceedings of OMAE2005, 24th International Conference on Offshore Mechanics and Arctic Engineering, June 12-16, 2005, Greece.
3. Navarro, C., P.L. Varghese, and M. Fink, "Measurement of  $^{13}\text{CO}_2/^{12}\text{CO}_2$  ratio using tunable diode laser based Raman spectroscopy and an atomic vapor filter" presented at the Laser Applications to Chemical and Environmental Analysis 2002 Conference.