

## Hansen A. Mansy, PhD, PMP

Biomedical Acoustics Research Lab, University of Central Florida  
12760 Pegasus Dr, MAE Dept, Rm 308  
(407) 823-1655 office

Hansen.Mansy@ucf.edu, Hansen\_mansy@rush.edu, mansy@uic.edu, mansy@iit.edu

### Education and Training

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Rush Medical College, Chicago, IL	Post Doc fellow	1994-1996	Biomedical Acoustics
Illinois Institute of Technology, Chicago, IL	Post Doc fellow	1990-1993	Flow Induced Vibrations
Illinois Institute of Technology, Chicago, IL	PhD	1985-1990	Mechanical and Aerospace Engineering
Cairo University, Egypt	BS, MS	1976-81,83-85	Mechanical Engineering

### Work Experience

- 1) University of Central Florida, Orlando, FL**  
2013-present Associate Professor, Mechanical and Aerospace Engineering
- 2) Biomedical Acoustics Research Company, Evanston, Illinois**  
1997-present Senior Scientist and Co-Founder
- 3) University of Illinois at Chicago, Chicago, Illinois**  
2001-present Adjunct Associate Professor, Department of Bioengineering
- 4) Rush Medical College, Chicago, Illinois**  
2009-2013 Associate Professor, Bioengineering  
2003-2009 Assistant Professor, Bioengineering  
1997-2013 Co-Director, Biomedical Acoustics Research Group  
1994-2002 Senior Research Scientist
- 5) Illinois Institute of Technology, Chicago, Illinois**  
1994-2013 Instructor, Adjunct Associate Professor, Mechanical, Materials and Aerospace Engineering  
1990-1993 Post-Doctoral Research Scientist  
1986-1990 Graduate Research Assistant

### Research Support

#### **a. Ongoing Research Support**

R43 HL112374                      **Mansy (PI)**                      6/12-5/14                      \$354,000

NIH/NIHLBI

Bedside monitoring of endotracheal tube position.

A study to develop an acoustic methodology for monitoring the position of endotracheal tubes using breath sound analysis

Role: PI

R43 HL099053                    **Mansy (PI)**                    8/11-7/13                    \$362,000  
NIH/NIHLBI  
A portable device for ambulatory monitoring of heart failure using heart vibrations.  
A study to develop a low frequency methodology and device for monitoring heart failure patients  
Role: PI

R01 EB012142                    Royston(PI)                    10/10-9/14                    \$1,600,000  
NIH/NIBIB  
The Audible Human Project.  
A study to develop an acoustic model of the human torso  
Role: Subcontract PI

**a. Pending Research Support**

R01 EB012142 supplement        Royston(PI)        10/13-9/14                    \$330,000  
NIH/NIBIB  
Portable Acoustic Imaging for Diagnosis of Pneumonia in Children.  
A study to develop an acoustic imaging system to help diagnose pneumonia in developing countries  
Role: Subcontract PI

**c. Completed Research Support**

R03 EB008373-01A1        Royston(PI)                    09/07-8/10                    \$300,000  
NIH/NIBIB  
The Audible Human Project.  
A study to develop an acoustic model of the human torso  
Role: Co-investigator

R44 DK59685-01                    **Mansy (PI)**                    5/06-5/11                    \$1,200,000  
NIH/NIDDKD  
Rapid assessment of vascular grafts patency.  
A study to develop an acoustic methodology and device for rapid assessment of blood vessels.  
Role: PI

R21/33 EB03286-01                    **Mansy (PI)**                    8/03-8/08                    \$1,450,000  
NIH/NIBIB  
Device for pneumothorax diagnosis using breath sounds.  
This is a study to develop an acoustic methodology for detection of pneumothorax using computerized analysis of breath sounds.  
Role: PI

R43 DK59685-01                    **Mansy (PI)**                    5/02-1/05                    \$100,000  
NIH/NIDDKD  
Rapid patency assessment of dialysis vascular access.  
A study to develop an acoustic methodology and device for rapid assessment of dialysis access patency.  
Role: PI

R44 HL61108-01                    **Mansy (PI)**                    5/01-4/06                    \$750,000  
NIH/NHLBI  
Portable device for instant detection of pneumothorax.  
This is a study to develop an acoustic methodology and device for portable, instantaneous detection of pneumothorax using pulmonary acoustic transmission measurements.  
Role: PI

TF 01-0014	<b>Mansy (PI)</b>	7/01-1/03	\$80,000
The Whitaker Foundation			
Source and use of breath sounds for pneumothorax detection.			
This is a study of the changes in breath sounds due to pneumothorax.			
Role: PI			
R21 RR14250-01A1	Royston (PI)	11/99-10/02	\$270,000
NIH NCRR Innovative Approaches Program			
New Paradigms in Tissue Vibration for Diagnostic Methods.			
This is a fundamental research study of the vibratory behavior of soft biological tissue in terms of modeling and measurement options with an interest in developing new diagnostic techniques			
Role: Co-I			
R43 DK55945-01	<b>Mansy (PI)</b>	9/99-9/01	\$100,000
NIH/ NIDDK			
Rapid detection of delayed gastric emptying.			
The goal of this project is to develop a non-invasive method for the diagnosis of delayed gastric emptying.			
Role: PI			
RG 97-0113	<b>Mansy (PI)</b>	12/97-5/01	\$210,000
The Whitaker Foundation			
Feasibility and analysis of a new method for the diagnosis of intestinal perforation.			
The major goal of this project is to develop a new technique for diagnosis of intestinal perforation.			
Role: PI			
R43 HL61108-01	<b>Mansy (PI)</b>	9/98-3/01	\$100,000
NIH/NHLBI			
Portable device for instant detection of pneumothorax.			
The major goal of this project is to develop a new technique for rapid diagnosis of pneumothorax using vibro-acoustic stimulation.			
Role: PI			

## **Teaching Activities**

### **a. Courses taught/developed**

#### Thermo-fluid

Aerodynamics of Aerospace Vehicles	(Undergraduate)
Compressible Flows	(Undergraduate)
Fluid Mechanics	(Undergraduate)
Dynamics of Viscous Flows - with emphasis on numerical methods	(Graduate)
Perturbation Methods in Fluid Mechanics	(Graduate)
Applied Thermodynamics	(Undergraduate)
Design of Thermal Systems	(Undergraduate)
Heat and Mass Transfer	(Undergraduate)
Thermodynamics	(Undergraduate)

#### Other

Computational Methods in Science and Engineering	(Special course)
Engineering Measurements	(Undergraduate)
Engineering Mechanics - Statics and Dynamics	(Undergraduate)
Design of Machine Elements	(Undergraduate)
Dynamic Systems and Control	(Undergraduate)
Theory of Vibrations	(Undergraduate)
Senior Design Projects in Bioengineering	(Undergraduate)

**b. Thesis and project supervision**Thesis:

1. Peng Y, The audible human project – Simulations of pulmonary vibro-acoustics. PhD Thesis, University of Illinois, expected Dec 2013. Thesis committee: Royston TR, Mansy HA, Magin R, Shabana A, Scott M
2. Aboutaleb A, Use of audible frequency acoustics for medical diagnosis. MS Thesis, University of Illinois, expected August 2013. Thesis committee: Mansy HA, Royston TR, Magin R, Shabana A
3. Kaya Yasar, "Wideband magnetic resonance elastography, PhD Thesis, University of Illinois, expected May 2013. Thesis committee: Royston TR, Mansy HA, Magin R, Shabana A, Scott M
4. Dai Z, Modeling of sound transmission in the thorax and torso. PhD Thesis, University of Illinois, expected May 2013. Thesis committee: Royston TR, Mansy HA, Magin R, Shabana A, Scott M
5. Acikgoz S, New Paradigms in pulmonary acoustics with application to diagnostics. PhD Thesis, University of Illinois, May 2007. Thesis Committee: Royston TJ, Mansy HA, Fisher P, Loth F, Shabana A
6. Yazicioglu Y, Vibro-acoustic radiation into air, water, and viscoelastic material from a fluid-filled viscoelastic cylindrical shell with internal turbulent flow due to constriction. PhD Thesis, University of Illinois, May 2005. Thesis Committee: Royston TJ, Loth F, Shabana A, Fisher P, Mansy HA
7. Zhang XL, Modeling sound transmission through the pulmonary system and chest with application to diagnosis of a collapsed lung. PhD Thesis, University of Illinois, August 2002. Thesis Committee: Royston TJ, Shabana A, Loth F, Mansy HA, and Sandler RH
8. Kim SH, Modeling and measurement of surface waves on a viscoelastic medium with application to medical diagnoses. MS Thesis, University of Illinois, August 2001. Thesis Committee: Royston TJ, Mansy HA, Loth F, Shabana A.
9. Yang P, Large-scale three dimensionalities in a circular cylinder wake. MS Thesis, IIT, May 1992  
Advisors: Williams DR and Mansy HA

Student Projects:

1. Bobko A, Langston A, and Rybczynska A, Treating lower respiratory infections in developing countries using mechanically powered nebulizers. Fall 2011 and Spring 2012 (Undergraduate)
1. Bonnema, C. Designing a data acquisition system for measuring vibro-acoustic signals at the chest wall. Spring 2010 (Undergraduate)
2. Johnson B, Bland J, Wright Z. A calibration set up for testing breath sound sensors. Fall 2008 and Spring 2009 (Undergraduate)
3. Gurnani A, Khan S, Koduri U, and Desai S. Design of a bench top acoustic model of the human thorax. Fall 2005 and Spring 2006 (Undergraduate)
4. Kulkarni K. Sounds generated from vascular stenosis. Fall 2002 and Spring 2003 (Graduate)
5. Patel V, Rodriguez C, Yang G. Sensors for measuring bio-acoustic signals. Fall 2002 and Spring 2003. (Undergraduate)
6. Bahn T, Sensinger J. Acoustic sensors for measuring abdominal sounds. Fall 2001 and spring 2002. (Undergraduate)
7. Sulocha, C, Numerical analysis of vortex instabilities. Fall 2001. (Undergraduate)
8. Musso, J Curry J, Ostovsky A, Analysis of Truck wind deflectors, Spring 2001. (Undergraduate)
9. Evans, J, Effect of palpation on gastrointestinal sounds in healthy subjects. Spring 2000. (Undergraduate)
10. Rogers E, Transmission properties of sound in non-homogeneous media. Summer 1994. (Graduate)
11. DePaz L, A spirometer based on a fluidic bi-directional flow meter. Fall 1993. (Undergraduate)
12. Leonard K, O'Konski J, Behn J, Testing of a reactive impeller turbine. Spring 1993. (Undergraduate)
13. Jacob S, Ayala M and Sanchez S, A study of heat transfer for a cylindrical extended surface. Spring 1993. (Undergraduate)

14. Madariaga M, Hai P, Streamwise wave number measurements in the far wake. Fall 1992. (Undergraduate)
15. Barrett A, Two-dimensional scanning LDV measurements in the wake of three-dimensional bodies. Spring 1992. (Graduate)
16. Wiegel M, Chrest D, Digital data acquisition under UNIX and DOS. Summer 1991. (Graduate)
17. Chung F, Lock-on states in the wake of a vibrating circular cylinder. Spring 1991. (IMSA program for high school students)

### Teaching honors/awards

Certificate of Teaching Excellence, Armor College of Engineering, Illinois Institute of Technology, 2002.  
Deans award for developing undergraduate fluids lab, Cairo University, 1984.

### Peer-reviewed publications

1. Sandler RH, **Mansy HA**, McCarthy W. Correlation between blood flow blockage and vascular sounds (in preparation)
2. **Mansy HA**, Warren WH, Balk RA, Royston T, Dai Z, Ping Y, Sandler RH. Pneumothorax detection using computerized analysis of pulmonary sounds. (in preparation)
1. Peng Y, Dai Z, **Mansy HA**, Sandler RH, Royston TR. Modeling percussive sound transmission through the torso and lungs, *Medical & Biological Engineering & Computing*, (under review).
2. Dai Z, Peng Y, Henry B, **Mansy HA**, Sandler RH, Royston TJ, A Comprehensive Computational Model of Sound Transmission through the Porcine Lung, *Journal of the Acoustical Society of America*, (under review).
3. Dai Z, Peng Y, Royston TR, **Mansy HA**, Sandler RH, Poroviscoelastic models for sound and vibration in the lungs, accepted for publication in *ASME J. of Vibration and Acoustic* 2013 (accepted for publication).
4. Dai Z, Peng Y, Royston TJ, **Mansy HA**, Sandler RH, Poroviscoelastic models for sound and vibration in the lungs, , submitted to the *ASME J. of Vibration and Acoustics* (2012).
5. Peng Y, Dai Z, Royston TR, **Mansy HA**, Sandler RH Chest Response to Vibratory Excitation: Advances Beyond Percussion., *Proceedings of the ASME 2012 International Mechanical Engineering Congress & Exposition, IMECE2012*, November 9-15, 2012, Houston, Texas, USA
6. Dai Z, Peng Y, **Mansy HA**, Royston TJ, Sandler RH, Magin RL, Estimation of local viscoelasticity of lungs based on surface waves, *Proceedings of the ASME 2011 International Mechanical Engineering Congress & Exposition IMECE2011* November 11-17, 2011, Denver, Colorado, USA
7. Dai Z, Peng Y, **Mansy H**, Royston T, Sandler R, Magin R. Estimation of local viscoelasticity of lungs based on surface waves. *Proceedings of the ASME 2011 International Mechanical Engineering Congress & Exposition IMEC2011-65561*, Denver CO, Nov 2011.
8. **Mansy HA**, Grahe J, Royston TJ, Sandler RH. Investigating a compact phantom and setup for testing body sound transducers. *Comp Biol Med*, 41:361-6, 2011.
9. **Mansy HA**, Whittier WL, Sandler RH. Hemodialysis access flow measurements using flow dilution and in-line dialysance are not interchangeable for hemodialysis access flow surveillance. *ASAIO J* 56, 2010.
10. Whittier WL, **Mansy HA**, Rutz DR, Lewis AM, Sandler RH. Comparison of hemodialysis access flow measurements using flow dilution and in-line dialysance. *ASAIO J* 55:369-372, 2009.
11. **Mansy HA**, Grahe J, Elke DA, Sandler RH. Design of a sound source phantom with uniform surface signal. *IEEE proc TIC-SCH conference*, Toronto, 2009.
12. Acikgoz S, Ozer MB, Royston TJ, **Mansy HA**, Sandler RH. Experimental and computational models for simulating sound propagation within the lungs. *ASME J vibration and acoustics* 30, nihpa45263, 2009.
13. **Mansy HA**, Grahe JR, Sandler RH. Elastic properties of synthetic materials for soft tissue modeling. *Phys Med Biol* 53: 2115-30 2008.
14. Ozer MB, Acikgoz S, Royston TJ, **Mansy HA**, Sandler RH. Boundary element model for simulating sound propagation and source localization within the lungs. *J Acoustical Soc Am* 122(1):657-61, 2007.
15. O'Connor CJ, **Mansy HA**, Balk RA, Tauman KJ, Sandler RH. Identification of endotracheal tube malpositions using computerized analysis of breath sounds. *Anesthesia and Analgesia* 101: 735-9, 2005.

16. **Mansy HA**, O'Connor CJ, Balk RA, Sandler RH. Breath sound changes associated with malpositioned endotracheal tubes. *Med Biol Eng Comput* 43:206-11, 2005.
17. **Mansy HA**, Hoxie SJ, Patel NH, Sandler RH. Computerized analysis of vascular sounds associated with vascular patency of hemodialysis access. *Med Biol Eng Comput* 43:56-62, 2005.
18. **Mansy HA**, Royston TJ, Balk RA, and Sandler RH. Pneumothorax detection using computerized analysis of breath sounds. *Med Bio Eng Comp* 40: 526-32, 2002.
19. **Mansy HA**, Royston TJ, Balk RA, and Sandler RH. Pneumothorax detection using pulmonary acoustic transmission measurements. *Med Bio Eng Comp* 40: 520-5, 2002.
20. **Mansy HA**, Royston TJ, and Sandler RH. The use of abdominal percussion for pneumoperitoneum detection. *Med Bio Eng* 40: 439-46, 2002.
21. Royston TJ, **Mansy HA**, Sandler RH. Modeling sound transmission through the pulmonary system and chest with application to diagnosis of a collapsed lung. *J Acoustical Society of Am* 111: 1931-46, 2002.
22. **Mansy HA**, Royston TJ, and Sandler RH. Acoustic characteristics of air cavities at low audible frequencies with application to pneumoperitoneum detection. *Med Bio Eng Comp* 39:159-68, 2001.
23. Zhang X, Royston TJ, **Mansy HA**, and Sandler RH. Radiation impedance of a finite circular piston on a viscoelastic half-space with application to medical diagnosis. *J Acoustical Soc Am* 109:795-802, 2001.
24. Kong X, **Mansy HA**, and Sandler RH. Multi resolution analysis of gastrointestinal sounds for small bowel obstruction identification. *Int J Comp and App* 8:7-12, 2001.
25. **Mansy HA** and Sandler RH. Detection and analysis of gastrointestinal sounds in normal and small bowel obstructed rats. *Med Biol Eng Comp* 38:42-48, 2000.
26. Royston TJ, **Mansy HA**, and Sandler RH. Excitation and Propagation of Surface Waves on a Viscoelastic Half-Space with Application to Medical Diagnosis. *J Acoustical Society of Am* 106:3678-86, 1999.
27. **Mansy HA** and Sandler RH. The use of gastrointestinal sounds for the diagnosis of small bowel obstruction. *Proceedings of the third International Workshop on Biosignal Interpretation* 174-77, 1999.
28. Tomomasa T, Morikawa A, Sandler RH, **Mansy HA**, Masahiko T, Hyman P, and Itoh Z. Gastrointestinal sounds and migrating motor complex in fasted humans. *Am J Gastroenter* 94:374-81, 1999.
29. **Mansy HA** and Sandler RH. Bowel sound signal enhancement using adaptive filters. *IEEE: Eng Med Biology Magazine* 16:105-17, 1997.
30. Williams DR, **Mansy HA**, and Fotouh A. Three-dimensional subharmonic waves during transition in the near-wake region of a cylinder. *Physics of Fluids A* 8:1476-85, 1996.
31. **Mansy HA**, Yang P, and Williams DR. Quantitative measurements of three-dimensional structures in the wake of a circular cylinder. *J Fluid Mechanics* 270:277-96, 1994.
32. Yang P, **Mansy HA**, and Williams DR. Oblique and parallel wave interaction in the near-wake of a circular cylinder. *Physics of Fluids A* 5:1657-60, 1993.
33. Williams DR, **Mansy HA**, and Amato C. The response and symmetry properties of a cylinder wake subjected to localized surface excitation. *J Fluid Mechanics* 234:71-96, 1992.
34. **Mansy HA** and Williams DR. Symmetry of interacting modes in a cylinder wake. *Physics of Fluids* 3:2047-9, 1991.
35. **Mansy HA** and Williams DR. An experimental and numerical study of the flow in the trapped vortex pair fluidic flowmeter (oscillator), *ASME Mechanics conference*, FED 76:35-9, 1989.
36. **Mansy HA** and Williams DR. Flow meter based on the trapped vortex pair fluidic oscillator. *Rev. Scientific. Instruments* 60:935-8, 1989.
37. Baghdadi AH and **Mansy HA**. A mathematical model for leak location in pipelines. *App. Math. Modeling*, 12, 1988.

### Invited lectures

1. Royston TJ, Dai Z, Peng Y, Kearney S, Henry B, **Mansy HA**, Sandler RH, and Balk RA. Modeling and Imaging Sound Transmission in the Lungs and How it is Affected by Injury, Disease and Therapy, 7<sup>th</sup> World Congress of Biomechanics, July 2014.
2. **Mansy HA**, Sandler RH. Use Vibro-acoustics for Medical Diagnosis, Midwest colloquium series, Chicago, 2012.
3. **Mansy HA**, Hoxie SJ, Patel NH, Sandler RH. Vascular sounds as an indicator of hemodialysis access patency. 149th Meeting of the Acoustical Society of America, Vancouver, Canada, 2005.

4. **Mansy HA**, Royston TJ, Balk RA, Sandler RH. Acoustic detection of pneumothorax. 145th Meeting of the Acoustical Society of America, Nashville, Tennessee, USA, 2003.
5. Sandler RH, **Mansy HA**, Uhing MR, Meyer PM, Kimura RE. Computerized analysis of bowel sounds in normal and small bowel obstructed rats. 145th Meeting of the Acoustical Society of America, Nashville, Tennessee, USA, 2003.
6. **Mansy HA**, Sandler RH. Audible frequency acoustics in medicine and biology, Midwest colloquium series, Chicago, 2001.
7. **Mansy HA**, Sandler RH. Use of adaptive filters for enhancement of bowel sounds by heart sound removal, Midwest colloquium series, Chicago, 1999.

### Book chapter

Royston TJ, Acikgoz S, Ozer MB, **Mansy HA**, Sandler RH. Advances in Computational Modeling of Sound Propagation in the Lungs and Torso with Diagnostic Applications, ASME Invited book chapter 2009

### Patents

1. **Mansy HA**, Sandler RH. A Method and apparatus for acoustic detection of need for airway suction, (US Patent pending)
2. Sandler RH, **Mansy HA**. A method and apparatus for acoustic detection of cardiac conditions, (US Patent pending)
3. **Mansy HA**, Sandler RH. Sensor and sensor assemblies for monitoring biological sounds and electric potentials, (US Patent pending).
4. **Mansy HA**, Sandler RH. Acoustic detection of endotracheal tube location, US Patent, 8,394,031, 2013
5. Sandler RH, **Mansy HA**. Acoustic detection of vascular conditions. US Patent 7,527,597, 2009
6. Williams DR, Meade K, Wilson N, and **Mansy HA**. Spirometer. US Patent 7094208, 2006.
7. **Mansy HA**, Sandler RH. Acoustic detection of gastric motility dysfunction. US Patent 6840913, 2005.
8. Sandler RH, **Mansy HA**. Acoustic detection of vascular conditions. US Patent 6780159, 2004.
9. Sandler RH, **Mansy HA**. Methods and apparatus for detection of gastrointestinal conditions utilizing computerized analysis of gastrointestinal sounds. US Patent 6776766, 2004.
10. **Mansy HA**, Sandler RH. A method and apparatus for detection of air cavities in a body. US Patent 6595928 B2, issued 2003.
11. Sandler RH, **Mansy HA**. Human controlled towable device for water surface and subsurface operation. US Patent 6575114 B2, 2003.
12. **Mansy HA**, Sandler RH. Acoustic detection of respiratory conditions. US Patent 6443907, 2002.
13. Sandler RH, **Mansy HA**. Methods and apparatus for detection of gastrointestinal conditions utilizing computerized analysis of gastrointestinal sounds. US Patent 6425874, issued 2002.
14. Sandler RH, **Mansy HA**. Methods and apparatus for characterizing gastrointestinal sounds. US Patent 6287266, 2001.
15. Sandler RH, **Mansy HA**. Methods and apparatus for characterizing gastrointestinal sounds. US Patent 6056703, 2000.
16. **Mansy HA** and Williams DR. The Trapped vortex pair fluidic oscillator. US Patent 4843889, 1989.

### Conference abstracts

1. Dai Z, Peng Y, **Mansy H**, Sandler R, Royston T. A Model of Lung Parenchyma Stress Relaxation Using Fractional Viscoelasticity. 7<sup>th</sup> World Congress of Biomechanics, July 2014
2. Peng Y, Dai Z, **Mansy H**, Sandler R, Balk R, Royston T Modeling sound transmission through the porcine chest. 7<sup>th</sup> World Congress of Biomechanics, July 2014
3. **Mansy HA**, Patel NH, Hoxie SJ, Sandler, RH. Computerized bruit analysis for detection of hemodialysis AV fistula stenosis, 31<sup>st</sup> annual scientific meeting, Society of Interventional Radiology, 2006.
4. **Mansy HA**, Hoxie, SJ, Warren WH, Balk RA, Sandler RH, Hassaballa. Detection of pneumothorax by computerized breath sound analysis. American College of Chest Physicians Annual Meeting, Chest 2004;126:881S.
5. Balk RA, **Mansy HA**, O'Connor CJ, Sandler RH. Identification of bronchial intubation using computer-assisted chest auscultation. American College of Chest Physicians Annual Meeting, Chest 2004;126:900S-901S.

6. O'Connor CJ, **Mansy HA**, Balk R, Sandler RH. Identification of endotracheal tube malposition using computerized analysis of breath sounds. *Anesth Analg* 2004; S-105.
7. **Mansy HA**, Balk R, Hassaballa H, Sandler RH. Acoustic detection of pneumothorax in an animal model. American College of Chest Physicians Annual Meeting, October 2003.
8. Kulkarni K, **Mansy HA**, Hoxie S, Sandler RH. Acoustic detection of arteriovenous graft patency. CUBIC (Chicago Universities Biomedical Engineering Consortium), January 2003.
9. Zhang X, Royston TJ, **Mansy HA**, Sandler RH. Radiation impedance of a finite circular piston vibrating normal to an isotropic viscoelastic half-space with application to medical diagnosis. *JASA* 2002.
10. Angtuanco TL, Evans J, Harrell L, **Mansy HA**, Sandler RH. The effect of abdominal palpation on gastrointestinal sounds (GIS) in healthy subjects: A quantitative investigation using computerized analysis. *Am J Gastroenterol* 2000;95:274A
11. Sandler RH, **Mansy HA**. Computerized gastrointestinal sound analysis changes with small bowel obstruction. *J Pediatr Gastroenterol Nutr* 2000;31:s189.
12. **Mansy HA**, Sandler R. The use of gastrointestinal sound analysis for the diagnosis of small bowel obstruction. 3rd International Workshop on Biosignal Interpretation, June 1999.
13. Kong X, **Mansy HA**, Sandler RH. Multi resolution analysis of gastrointestinal sounds for small bowel obstruction identification. 3rd International Workshop on Biosignal Interpretation, June 1999.
14. **Mansy HA**, Sandler R, Royston T, Jones D. Testing sensors for body surface vibration measurement. 21st Ann Int Conf IEEE Engineering Med Biology Society, October 1999.
15. **Mansy HA**, Sandler RH. A new acoustic method for immediate pneumoperitoneum detection. *J Pediatr Gastroenterol Nutr* 1998;27:486.
16. Sandler RH, **Mansy HA**, Kimura RE, Uhing MR. Evolution of gastrointestinal sound changes after small bowel obstruction in an experimental rat model. *J Pediatr Gastroenterol Nutr* 1998;27:486.
17. **Mansy HA**, Sandler RH. Choice of operating parameters in heart sound removal from bowel sounds using adaptive filtering. 19<sup>th</sup> Ann Intl Conf IEEE Engineering Med Biology Society, Chicago, 1997:106.
18. Sandler RH, **Mansy HA**, Fiala-Cline K. Computerized analysis of swallowing sounds in normal subjects. *Am J Gastroenterol* 1997;92:1602b.
19. Sandler RH, **Mansy HA**. Effects of abdominal palpation on bowel sounds: A quantitative investigation using computerized analysis. *J Pediatr Gastroenterol Nutr* 1997;25:484b.
20. Sandler RH, **Mansy HA**, Kumar S, Pandya P, Reddy N. Computerized analysis of bowel sounds in normal fed and fasted human subjects. *Gastroenterology* 1996;110:A752.
21. Sandler RH, **Mansy HA**, Kumar S, Pandya P, Reddy N. Computerized analysis of bowel sounds in human subjects with mechanical bowel obstruction vs. ileus. *Gastroenterology* 1996;110:A752.
22. Sandler RH, **Mansy HA**. Computerized analysis of bowel sounds in human subjects with mechanical bowel obstruction vs. ileus, an update. *J Pediatr Gastroenterol Nutr* 1996;23:369a.
23. Sandler RH, **Mansy HA**. Computerized analysis of bowel sounds in normal and small bowel obstructed rats. *J Pediatr Gastroenterol Nutr* 1996;23:369d.
24. **Mansy HA**, Sandler RH. Artifact removal from biological signals using adaptive filters as applied to bowel sound enhancement by removing heart sounds in anesthetized rats. Rush University Research Forum, Rush University, Chicago, 1996:206.

## **Review Activities**

### **a. Journals**

American Society of Mechanical Engineers – Journal of Vibration and Acoustics  
 Annals of Biomedical Engineering  
 European Journal of Mechanics B / Fluids  
 IEEE Transactions on Biomedical Engineering  
 Journal of the Acoustic Society of America  
 Journal of Clinical Anesthesia  
 Journal of Fluids Engineering  
 Latin American Applied Research  
 Medical and Biological Engineering and Computing  
 Medical Engineering and Physics

**b. Research proposals**

Air Force Office of Scientific Research (AFOSR)  
American Institute of Biological Sciences  
Department of Defense, US Army Medical Research Acquisition Activity (USAMRAA)  
Israel Science Foundation (ISF)  
Michigan Tri-Corridor Technology Grants /American Association for the Advancement of Science  
National Institutes of Health (NIH)  
National Science Foundation (NSF)

**c. Text Books**

McGraw Hill Mechanics Series  
John Wiley & Sons, Science Series

**d. Patents**

Grossman and Flight, Attorneys at Law, Chicago, IL

**Organization membership**

Acoustical Society of America (ASA)  
American Society of Mechanical Engineers (ASME)  
American Physical Society (APS)  
Engineering in Medicine and Biology Society (EMBS)  
Institute of Electrical and Electronics Engineers (IEEE)

**Chicago regional TV media appearances**

Gastrointestinal sound analysis research, WMAQ TV, Channel 5 (NBC), April 2002

**Professional listings**

Who's Who National Registry, 2002, 2004, 2007, 2008