
BIOGRAPHICAL SKETCH

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NAME E. Mark Haacke, PhD	POSITION TITLE Director		
eRA COMMONS USER NAME ak5444			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Toronto	B.S.	1973	Mathematics & Physics
University of Toronto	M.S.	1975	Theoretical Physics
University of Toronto	Ph.D.	1978	High Energy Physics

A. Positions and Honors.

Positions and Employment

1981-1983 **Research Geophysicist**, Gulf Research and Development, Pittsburgh, PA.
1983-1985 **Senior Research Scientist**, Picker International, Highland Heights, OH.
1985-1989 **Assistant Professor of Radiology and Physics**, Head, MR Physics and Basic Science. Case Western Reserve University, Cleveland, OH.
1989-1993 **Associate Professor**, Department of Radiology with appointments in Physics and Biomedical Engineering, Case Western Reserve University, Cleveland, OH.
1993-1999 **Professor of Radiology**, Director MR Imaging Research, Mallinckrodt Institute of Radiology, Washington University, St. Louis, MO.
1999-Present **Director**, The MRI Institute for Biomedical Research, Detroit, MI.
2002-Present **Professor of Radiology**, Wayne State University, Detroit, MI.
2002-Present **Director**, Harper University Hospital, Magnetic Resonance Imaging Facility, Detroit, MI.
2002-Present **Professor of Biomedical Engineering**, Wayne State University, Detroit, MI.
2002-Present **Adjunct Professor**, Loma Linda University, Loma Linda, CA.
2005-Present **Adjunct Professor**, Department of Electrical and Computer Engineering at McMaster University and the Brain-Body Institute at St Joseph's Healthcare in Hamilton, Ontario, Canada.

Other Experience and Professional Memberships

1983-1985 **Lecturer in Physics**, New course on MRI, Case Western Reserve University, Cleveland, OH.
1992-1992 **Associate Editor**, IEEE for Transactions on Medical Physics.
1992-1994 **Chairman**, Liaison Committee at the Society for Magnetic Resonance Imaging (SMRI).
1992-1994 **Co-founder**, Joint Merger Evaluation Committee for the Society for Magnetic Resonance Imaging (SMRI) / International Society for Magnetic Resonance in Medicine (ISMRM).
1993 **Vice-President**, Interim Board at the Society of Magnetic Resonance Imaging (SMRI).
1993-1994 **President**, Society of Magnetic Resonance Imaging (SMRI).
2007-Present **Assoc Chair**, School of Medicine, Dept of Biomedical Eng, Wayne State University, Detroit, MI.

Honors

1989 Sylvia Sorken Greenfield Award for the best paper in Medical Physics
1992 Fellow of the Society Award for the Society of Magnetic Resonance Imaging
1994 Silver Medal Award, Society of Magnetic Resonance
1997 Poster Award at the 14th Annual Meeting, European Society for Magnetic Resonance in Medicine and Biology. J.R. Reichenbach, E.M. Haacke, B.C.P. Lee, Ch. Przetak, W.A. Kaiser
1998 Marie-Sklodowska-Curie Prize for Visualization of Cerebral Venous Structures Using High Resolution MRI by J.R. Reichenbach, L.R. Schad, M. Essig, E.M. Haacke, W.A. Kaiser
1999 Awarded the Visiting Professorship as the Roentgen Professor of Physics in Wuerzburg.
2000 Poster Prize of the XXVI Congress of the European Society of Neuroradiology 2000. J.R. Reichenbach, L. Jonetz-Mentzel, C. Fitzek, H.-J. Mentzel, E.M. Haacke, W.A. Kaiser.

- 2002 Scientific Exhibition Award ECR 2002 Cum Laude. J.R. Reichenbach, C. Fitzek, L. Jonetz-Mentzel, D. Sauner, H.-J. Mentzel, E.M. Haacke, W.A. Kaiser. European Congress of Radiology
- 2004 Gold Medal Award, International Society of Magnetic Resonance in Medicine
- 2006 Wayne State University, Office of the Vice President for Research, Research Mentors Award Program for New Faculty for mentoring of Dr. Yu-Chung Norman Cheng
- 2006 RSNA Educational Exhibit Award LL-NR4709 entitled "Susceptibility Weighted Imaging (SWI) of the Brain: Pictorial Review of the Technique, Anatomy, and Pathology" T. Hirai, MD, Kumamoto JAPAN; M. Akter; M. Kitajima, MD; T. Okuda, MD; E.M. Haacke, PhD; Y. Yamashita, MD
- 2008 Best Abstract Award "Improving the detection of diffuse axonal injury by complementary use of advanced MRI" at the 6th North American Brain Injury (NABIS) Annual Conference. Z. Kou, R. Benson, R. Gattu, M. Haacke. The abstract presented our breakthrough on a complementary use of SWI and DTI techniques for injury detection.
- 2009 Regional Scholarship for Asia "Imaging the Vessel Wall in Major Peripheral Arteries using Susceptibility Weighted Imaging: Visualizing Calcifications" at the 12th Annual Society of Cardiovascular Magnetic Resonance (SCMR). Qi Yang, Kuncheng Li, Jiangtao Liu, S. Barnes, Z. Wu, J. Neelavalli, J. Hu, E.M. Haacke.

B. Selected peer-reviewed publications. (Selected from 189 peer-reviewed publications)

1. R.R. Benson, S.A. Meda, S. Vasudevan, Z. Kou, K. A. Govindarajan, R.A. Hanks, S.R. Millis, M. Makki, Z. Latif, W. Coplin, J. Meythaler, E.M. Haacke. Global White Matter Analysis of Diffusion Tensor Images is Predictive of Injury Severity in TBI. *Journal of Neurotrauma* 2007 – 24:446-459.
2. J. Jiang, E.M. Haacke, M. Dong. The Dependence of Vessel Area Accuracy and Precision as a Function of MR Imaging Parameters and Analysis Procedure. *JMRI* 2007 – 25:1226-1234.
3. E.M. Haacke, M. Ayaz, A. Khan, E.S. Manova, B. Krishnamurthy, L. Gollapalli, C. Ciulla, I. Kim, F. Petersen, W. Kirsch. Establishing a Baseline Phase Behavior in Magnetic Resonance Imaging for Determining Normal versus Abnormal Iron Content in the Brain. *JMRI* 2007 – 26:256-264.
4. E.M. Haacke, C.L. Filletti, R. Gattu, C. Ciulla, A.Al-Bashir, K. Suryanarayanan, M. Li, Z. Latif, Z. DelProposto, V. Sehgal, T. Li, V. Torquato, R. Kanaparti, J. Jiang, J. Neelavalli. New Algorithm for Quantifying Vascular Changes in Dynamic Contrast-Enhanced MRI Independent of Absolute T1 Values. *MRM* 2007 – 58:463-472.
5. Y.C.N. Cheng, C.Y. Hsieh, J. Neelavalli, Q. Liu, M.S. Dawood, E.M. Haacke. A complex sum method of quantifying susceptibilities in cylindrical objects: the first step toward quantitative diagnosis of small objects in MRI. *MRI* 2007 – 25:1171-1180.
6. J. Hu, S. Yang, Y. Xuan, Q. Jiang, Y. Yang and E.M. Haacke. Simultaneous detection of resolved glutamate, glutamine, and γ -aminobutyric acid at 4T. *JMR* 2007 – 185:204-213.
7. C. Juhasz, E.M. Haacke, J. Hu, Y. Xuan, M. Makki, M.E. Behen, M. Maqbool, O. Muzik, D.C. Chugani, H.T. Chugani. Multimodality imaging of cortical and white matter abnormalities in Sturge-Weber syndrome. *AJNR* 2007 – 28:900-906.
8. K.S. Parthasarathy, Y.C.N. Cheng, J.P. McAllister II, Y. Shen, J. Li, K. Deren, E.M. Haacke, G.W. Auner. Biocompatibilities of sapphire and borosilicate glass as cortical neuroprostheses. *MRI* 2007 – 25:1333-1340.
9. M. Akter, T. Hirai, Y. Hiai, M. Kitajima, M. Komi, R. Murakami, H. Fukuoka, A. Sasao, R. Toya, E.M. Haacke, M. Takahashi, T. Hirano, Y. Kai, M. Morioka, K. Hamasaki, J. Kuratsu, Y. Yamashita. Detection of Hemorrhagic Hypointense Foci in the Brain on Susceptibility-Weighted Imaging: Clinical and Phantom Studies. *Academic Radiology* 2007 - 14:1011-1019.
10. J. Neelavalli and E.M. Haacke. A Simplified Formula for T1 Contrast Optimization for Short TR Steady State Incoherent (Spoiled) Gradient echo Sequences. *MRI* 2007 - 25:1397-401.
11. N. Raz, K.M. Rodrigue, and E.M. Haacke. Brain Aging and Its Modifiers: Insights from *in Vivo* Neuromorphometry and Susceptibility Weighted Imaging. *Ann NY Acad Sci* 2007 - 1097:84–93.
12. J. Li, J.P. McAllister II, Y. Shen, M.E. Wagshul, J.M. Miller, M.R. Egnor, M.G. Johnston, E.M. Haacke, and M.L. Walker. Communicating Hydrocephalus in Adult Rats with Obstruction of the Basal Cisterns or the Cortical Subarachnoid Space. *Experimental Neurology* 2008 – 211:351-361.
13. J. Hu, Y. Yu, C. Juhasz, Z. Kou, Y. Xuan, Z. Latif, K. Kudo, H.T. Chugani, E.M. Haacke. MR Susceptibility Weighted Imaging (SWI) Complements Conventional Contrast Enhanced T1 Weighted MRI in Characterizing Brain Abnormalities of Sturge-Weber Syndrome. *JMRI* 2008 – 28:300-307.

14. C.E.A. Batista, H.T. Chugani, J. Hu, E.M. Haacke, M.E. Behen, E.J. Helder, C. Juhasz. Magnetic Resonance Spectroscopic Imaging Detects Abnormalities in Normal-Appearing Frontal Lobe of Patients With Sturge-Weber Syndrome. *J Neuroimaging* 2008 - 18:306-313.
15. Y. Shen, Y-C. N. Cheng, G. Lawes, J. Neelavalli, C. Sudakar, R. Tackett, H.P. Ramnath, E.M. Haacke. Quantifying magnetic nanoparticles in non-steady flow by MRI. *MR Mater Phy* 2008 - 21:345–356.
16. D.S. Pandian, C. Ciulla, E.M. Haacke, J. Jiang, M. Ayaz. Complex threshold method for identifying pixels that contain predominantly noise in magnetic resonance images. *JMRI* 2008 - 28:727-735.
17. E. M Haacke, S. Mittal, Z. Wu, J. Neelavalli, Y.C. Cheng. Susceptibility-weighted imaging: technical aspects and clinical applications, part 1. *AJNR* 2009 - 30:19-30.
18. Z. Wu, S. Mittal, K. Kish, Y. Yu, J. Hu, E.M. Haacke. Identification of calcification with MRI using susceptibility-weighted imaging: a case study. *JMRI* 2009 - 29:177-182.
19. B.G. Sood, Y. Shen, Z. Latif, X. Chen, J. Sharp, J. Neelavalli, A. Joshi, T.L. Slovis, E.M. Haacke. Aerosol Delivery in Ventilated Newborn Pigs: An MRI Evaluation. *Pediatr Res.* 2008 – 64:159-164.
20. Y. Xu and E.M. Haacke. An iterative reconstruction technique for geometric distortion-corrected segmented echo-planar imaging. *MRI* 2008 - 26:1406-1414.
21. Rowe, D.B., Haacke, E.M.: Thresholding Complex Magnetic Resonance Images Using Magnitude and Phase. *Proc. Am. Stat. Assoc., Biometrics Section* – 2008;13:1922-1929.
22. Z. Wu, S. Mittal, K. Kish, Y. Yu, J. Hu, E.M. Haacke. Identification of Calcification with MRI Using Susceptibility-Weighted Imaging: A Case Study. *JMRI* 2009 – 29:177-182.
23. Y.C. Cheng, J. Neelavalli, E.M. Haacke. Limitations of calculating field distributions and magnetic susceptibilities in MRI using a Fourier based method. *Phys Med Biol.* 2009 - 54:1169-1189.
24. S. Mittal, Z. Wu, J. Neelavalli, E.M. Haacke. Susceptibility-Weighted Imaging: Technical Aspects and Clinical Applications, Part 2. *AJNR* 2009 – 30:232-252.
25. E.M. Haacke, M. Makki, Y. Ge, M. Maheshwari, V. Sehgal, J. Hu, M. Selvan, Z. Wu, Z. Latif, Y. Xuan, O. Khan, J. Garbern. Characterizing Iron Deposition in Multiple Sclerosis Lesions Using Susceptibility Weighted Imaging. *JMRI* 2009 – 29;537-544.
26. S.R.S. Barnes and E.M. Haacke. Susceptibility Weighted Imaging: Clinical Angiographic Applications. *MRI Clinical N Am* 2009 - 17;47-61.
27. J. Neelavalli, Y-C.N. Cheng, J. Jiang, E.M. Haacke. Removing Background Phase Variations in Susceptibility Weighted Imaging Using a Fast, Forward-Field Calculation. *JMRI* 2009 – 29;937-948.
28. Y. Ge, V.M. Zohrabian, E-O. Osa, J. Xu, H. Jaggi, J. Herbert, E.M. Haacke, R.I. Grossman. Diminished visibility of cerebral venous vasculature in multiple sclerosis by susceptibility-weighted imaging at 3.0 T. *JMRI* 2009 – 29;1190-1194.
29. E.S. Manova, C.A. Habib, A.S. Boikov, M. Ayaz, A. Khan, W.M. Kirsch, D.K. Kido, E.M. Haacke. Characterizing the mesencephalon using susceptibility weighted imaging. *AJNR* 2009 - 30;569 –574.
30. Q. Yang, J. Liu, S.R.S. Barnes, Z. Wu, K. Li, J. Neelavalli, J. Hu, and E.M. Haacke. Imaging the Vessel Wall in Major Peripheral Arteries using Susceptibility Weighted Imaging: Visualizing Calcifications. *JMRI* 2009 - 30;357-365.
31. Hillman GG, Singh-Gupta V, Zhang H, Al-Bashir AK, Katkuri Y, Li M, Yunker CK, Patel A, Abrams J, Haacke EM. DCE-MRI of vascular changes induced by sunitinib in papillary renal cell carcinoma xenograft tumors. *Neoplasia* 2009 - 11;910-920.
32. Chavhan, G.B., Babyn, P.S., Thomas, B., Shroff, M.M., Haacke, E.M. Principles, Techniques, and Applications of T2*-based MR Imaging and Its Special Applications1. *RadioGraphics* 2009;29;1433-1449.
33. Cheng, Y-C N., Hsieh, C-Y, Neelavalli, J. and Haacke, E.M. Quantifying effective magnetic moments of narrow cylindrical objects in MRI. *Phys. Med. Biol.* 54;7025-7044.

C. Research Support.

MEDC 06-1-P1-0193 (Dong) 12/20/2006 – 12/31/2009 0.60 calendar
 State of MI/MI Economic Development Corp. \$617,157
 HyperEye: Susceptibility Weighted Imaging-Bases Informatics Tool for Brain Tumor
 Goals: Develop medical imaging systems with ready economical and technological applications, in which informatics tools use quantitative data extracted from medical images to help radiologist/physician make highly informed and accurate clinical decisions.

R01 AG011230-11 (Raz)	04/01/2005 – 03/31/2010	0.24 calendar
NIH – National Institute of Aging (AG)	\$18,085	
Neural Correlates and Modifiers of Cognitive Aging		
Goals: Continuation and expansion of the research activities of the past 11 years to describe course of differential brain aging, mechanisms of differential brain shrinkage, age-related brain changes and approach to study of the biological and cognitive change.		
H133G080064 (Hanks)	10/01/2008 – 09/30/2010	0.00 calendar
National Institute on Disability and Rehabilitation Research	\$593,022	
Neuroanatomical Correlates of Positive Psychology Among People with Traumatic Brain Injury: A Biopsychosocial Model. <i>A Field Initiated Grant</i>		
Goals: Improve our ability to identify individual characteristics and resources that can be used to facilitate well-being and recovery of function after TBI.		
NSF 06-597 (Dong)	06/01/2008 – 05/31/2011	0.60 calendar
National Science Foundation	\$270,822	
CRI:IAD Acquisition of Research Infrastructure for Knowledge-enhanced, Large-scale Learning of Multimodality Visual Data		
Goals: Purchase a major piece of equipment for data storage.		
2R01 HL062983-04A2 (Haacke)	09/01/2008 – 05/31/2011	2.40 calendar
National Institutes of Health	\$1,560,829	
Susceptibility Weighted Imaging (SWI)		
Goals: Continue the development of SWI to: a) make it more clinically viable by reducing phase processing artifacts; b) evaluate susceptibility itself by creating a susceptibility map of human tissue; c) study its role as a new MR angiographic method by simultaneously collecting MRA and SWI data; and d) speed up its acquisition time to less than 5 minutes for whole brain coverage, independent of any parallel imaging gain factor.		
K08 MH079176A (Behen)	09/03/2007 – 07/31/2012	0.00 calendar
National Institutes of Health /NIMH	\$680,483	
Structural and Functional Neural Correlates of Early Postnatal Deprivation		
Goals: Evaluate the neuroanatomical correlates of early social deprivation (ESD) in human children using both state-of-the-art MRI and PET methods.		
Master Research Agreement (Haacke)	07/01/2009 – 06/30/2012	0.60 calendar
Siemens Medical Solutions	\$300,000	
Research Agreement		
Goals: Collect clinical SWI data for trauma, stroke, and vascular disease.		

OVERLAP

No overlap for Dr. Haacke exists.