

## ***CURRICULUM VITAE***

***Toril A Nagelhus Hernes***

Name: **Toril A. Nagelhus Hernes (female)**  
Date of birth: **Toril A. Nagelhus Hernes**  
Present Position: **Professor II, DMF, NTNU**  
**Research Director/Head, Medical Technology, SINTEF**  
Academic Degree: **MSc (1992), PhD Biophysics Medical Technology (1997)**  
Nationality: **Norwegian**  
Sivil status: **Married, two children, 6, 13 years**



### **Education:**

1992-97: PhD Medical Techn., Norwegian University of Science and Technology, NTNU  
1987-92: MSc Electronics and Data Technology /MSc Inst. Physics, NTH  
1986-87: Medical studies, Medical Faculty, University of Oslo  
1998-today: Various management courses, Champion Leader League, CLL, problem based learning, ped.

### **Special Assignments:**

2008 – today: Board Invivosense ASA  
2006 - today: European Technology Platform in Nanomedicine – Co-Chair Mirror group – NanoDiagnostics  
2007-2011: Board Innovation division, Norwegian Research Council  
2001-today: Steering committee member of SMIT (Society for Minimally Innovation and Technology) ,  
Co-presidency Congress 2002 and 2010  
2000- today: Leader group in Strategic Work Program in Medical Technology at NTNU  
2005-today: Advisory board for Int. Master in Medical Techn, NTNU  
2005-today: Expert in Norwegian Society for Automatisations, Medical Cybernetics.  
1998-today: Participant in various boards and advisory groups nationally and internationally related to medical technology research, innovation and commercialization  
1998-today: Reviewer for various international scientific journals, awards and positions

**Academic field:** Toril A. Nagelhus Hernes has her basic educational background from courses in medicine, biotechnology, computer science/physics, molecular imaging, and medical technology. She has for more than 16 years worked in the field of research and development within medical technology,- first as a PhD student, then as a researcher and in recent years as a professor at NTNU and a Research Director at SINTEF. In her positions at SINTEF and as professor at NTNU she is today scientifically involved in many of the projects in the field of medical technology and image guided therapy and she is also supervisor for 5 PhD students within image guided surgery and simulation. The projects are covering both clinical and technological research, development and innovation projects at the National Centre of 3D Ultrasound in Surgery (<http://www.sintef.no/igs>), Operating Rooms of the Future (ORF, <http://www.stolav.no/StOlav/for-e/index.htm>) as well as the CRI (Centre for Research based innovation) Medical Imaging laboratory (MILab, <http://www.ntnu.no/medicalimaging/>) at NTNU. Toril Hernes was one of the driving persons, establishing "Operating Room of the Future" in Trondheim and was responsible for establishing the collaboration research agreements with the industrial partners. The department of Medical Technology (SINTEF) directed by Toril Hernes works in close collaboration with other departments at SINTEF related to ICT and Material and Chemistry. Toril Hernes has through her background caught an insight in various disciplines both due to clinical diagnostics, therapy and demands in clinical practice. Interdisciplinary clinical and technological research based on input from surgeons, radiologists, interventional radiologists, nurses, technologists, and industry is her main interest and focus area. This is also further emphasized in the published papers, which also show the strength of the interdisciplinary collaboration between technologists and clinical personnel at St Olavs Hospital/NTNU by co-authorship of papers. The research activity has gained several international awards and acknowledgements. Toril Hernes also has experience in commercialization based on research (establishment of MISON, now Sonowand in 1998) and has established international scientific collaboration and network with several other research teams and researchers nationally and internationally, as shown by membership of the Steering Committee of SMIT (Society of Medical Innovation and Technology) as well as the European Technology Platform in Nanomedicine.

**Management:** Toril Hernes is a part of SINTEFs long time experience in innovation in tight collaboration with industry, universities and hospitals both nationally and internationally. Toril Hernes has long experience in project and personnel leadership and management in R&D organizations since 1997 after finishing her PhD degree. Specific project management examples are: National center of 3D ultrasound (10 mill NOK yearly since 1998: 120 mill NOK), FIFOS (Operating room, 10 mill NOK) and Enhanced Minimally invasive therapy (13 mill NOK). The Department of Medical technology at SINTEF is also managing the secretary of InnoMed; National Centre of Innovation and Business Development in Health Care. The activity is especially related to innovation, user driven

R&D, which in the end should give product development in companies based on the demands of the end user,- the hospitals. Since 2004 the management of clinical trials on behalf of the hospitals in Mid Norway has been a part of the department of Medical technology at SINTEF. The main activities are protocol developments, industry collaboration well as the follow up of clinical studies and testing of new technology in the clinic. Today, Toril Hernes is responsible for app 30 research scientists/advisors working within the field of Image guided surgery, innovation in health care, clinical studies and medical microbiology. The position as a Research Director/Head of dept of Medical technology in SINTEF involves scientific, financial and personnel responsibility for the departments activities and deliveries. The department has had both scientific and economical positive results every year under her management in the period from 1998-2010.

**Adademic and professional publications and presentations**

>40 papers, >80 congress abstract presentations. The R&D activity of the national centre of 3D Ultrasound also counts >40 newspaper/media/TV presentations, 11 awards related to the research activity.

**Papers 2006-2010 :**

1. Gjerald, S, Brekken R, Hernes T: Realtime simulation for low cost training simulators. Proceedings (10pages), SPIE Medical Imaging, San Diego, California, February 2010
2. Selbekk T, Brekken R, Solheim O, Lydersen S, **Hernes TAN**, Unsgård G. Tissue motion and strain in the human brain assessed by intraoperative ultrasound in glioma patients, *Ultrasound in Medicine & Biology*, 2010; 36(1): 2-10.
3. Solberg OV, Langø T, Tangen GA, Mårvik R, Ystgaard B, Rethy A, **Hernes TAN**. Navigated ultrasound in laparoscopic surgery. *Minim Invasive Ther Allied Technol (MITAT)*, October 2008; DOI: 10.1080/13645700802383975
4. Rygh OM, Selbekk T, Torp S, Lydersen S, **Hernes TAN**, Unsgaard G. Comparison of ultrasound findings with histopathology in subsequent phases of glioblastoma resection, In press, *Acta Neurochirurgica*. Online first, (DOI:10.1007/s00701-008-0017-3), 2008.
5. Langø T, Tangen GA, Mårvik R, Ystgaard B, Yavuz Y, Kaspersen JH, Solberg OV, **Hernes TAN**. Navigation in laparoscopy – Prototype research platform for improved image-guided surgery. *Minim Invasive Ther Allied Technol (MITAT)*, 2008; 17:1:17-33.
6. Brekken R, Dahl T, **Hernes TAN**, Myhre HO. Reduced strain in abdominal aortic aneurysms after endovascular repair. *J Endovasc Ther* 2008;15:453-461.
7. Manstad-Hulaas F, Ommedal S, Tangen GA, Aadahl P, **Hernes TN**: Side-Branshed Stent Graft Insertion Using navigation technology: A Phantom Study, *European Surgical Research*, Jul 27, 39(6): 364-371, 2007. (DOI:10.1159/000106512).
8. Rasmussen I, Lindseth F, Rygh O, Berntsen EM, Selbekk T, Xu J, **Hernes TAN**, Harg E, Håberg A, Unsgård G: Functional neuronavigation combined with intraoperative 3D ultrasound: Initial experiences during surgical resections close to eloquent brain areas and future directions in automatic brain shift compensation of preoperative data. *Acta Neurochirurgica*, 149:365-378, 2007
9. Solberg OV, Lindseth F, Torp H, Blake RE, **Hernes TAN**. Freehand 3D ultrasound reconstruction algorithms - A review. *Ultrasound Med Biol*, 33:7:991-1009, 2007.
10. Brekken R, Kaspersen J, Tagen G, Dahl T, **Hernes T**, Myhre H. 3D visualization of strain in abdominal aortic aneurysms based on navigated ultrasound imaging. *Proceedings of the SPIE Medical Imaging- Physiology, Function and Structure from medical images [6511-52]*. San Diego February 2007.
11. Rygh OM, Selbekk T, Lindseth F, Müller TB, **Hernes TAN**, Unsgaard G. Intraoperative navigated 3D ultrasound angiography in surgery. *Surgical Neurology*, 66:581-592, 2006.
12. **Hernes TAN**, Lindseth F, Selbekk T, Rygh OM, Tangen GA, Rasmussen I, Wollf A, Rasmussen I Solberg OV, Harg E, Augdal S, Couweleers F, Unsgaard G. Technical developments for improved 3D ultrasound guided neurosurgery - Computer-assisted 3D ultrasound-guided neurosurgery: technological contributions, including multimodal registration and advanced display, demonstrating future perspectives. *International Journal of Medical Robotics and Computer Assisted Surgery*, 2:1:45-59, 2006.
13. Brekken R, Bang J, Ødegård A, Aasland J, **Hernes TAN**, Myhre HO. Strain estimation in abdominal aortic aneurysms from 2D ultrasound. *J Ultrasound Med Biol*, 32:1:33-42, 2006.
14. Unsgaard G, Rygh OM, Selbekk T, Müller TB, Kolstad F, Lindseth F, **Hernes TAN**. Intra-operative 3D ultrasound in neurosurgery. *Acta Neurochirurgica*, 148:3:235-53, 2006.
15. Rygh OM, Cappelen J, Selbekk T, Lindseth F, **Hernes TANH**, Unsgård G. Endoscopy guided by an intraoperative 3D ultrasound based neuronavigation system. *Minim Invasive Neurosurg*, February, 49:1:1-9, 2006.