



Application Form for MICROKELVIN Transnational Access Project

1. General Information

Project number:	TKK 02			
Project title:	Design of mechanical cantilevers for a sub-mK experiment			
Project acronym:				
Lead scientist: ¹	Title:	Dr.		
	First name:	Tjerk		
	Last name:	Oosterkamp		
	Birth date:	9 October 1972		
	Research status/Position:	Associate professor		
	New User: ²	Yes, I have seen the facility, but never used it.		
	Scientific Field:	Physics – microcantilevers		
	Home institution:	Leiden University		
	Home institution is MICROKELVIN partner:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
	Business address:			
	Street:	Niels Bohrweg 2		
	Street No.:	2		
	PO Box:			
	City:	Leiden		
	Zip/Postal Code:	2333 CA		
	Country:	The Netherlands		
	Telephone:	+31-71-5275424		
	Fax:	+31-71-5275404		
	E-mail:	oosterkamp@physics.leidenuniv.nl		
	Curriculum vitae (18 lines max):			
	- PhD with Leo Kouwenhoven and Hans Mooij at TU Delft, the Netherlands			
-1999, on transport measurements and coherence in quantum dots at 20 mK.				
-				
-1999-2000 postdoc with C. Lieber at Harvard University				
-carbon nanotube AFM probes				
-				
-2000-2008 assistant / associate professor at Leiden University				
-probe microscopy in liquids				
-biomedical applications				
-				
-				
-				
-2008 ERC starting grant				
-				
Five most recent publications:				
1-				
2-				
3-				
4-				
5-				
Other participating scientists: ³	Name:	Position:	New User: ²	
	1-			
	2-			
	3-			

¹ The lead scientist indicated here is expected to participate in the campaign as a user of the infrastructure.

² Indicate 'Yes' only if the user has never visited the infrastructure before this specific project, otherwise write 'No'.

³ Please list all participating user group members. Expand the table, if necessary.

2. Project Information

Name of host infrastructure:	Low Temperature Laboratory, Helsinki University of Technology (TKK)		
Access provider / Infrastructure Director:	Name: Juha Tuoriniemi	E-mail address: jtt@neuro.hut.fi	
	Mikko Paalanen	Mikko.Paalanen@neuro.hut.fi	
Planned project dates:	Start date:	03/08/2009	Completion date: 18/08/2009
Project description (12 lines max): - In Leiden we have developed a system by which to detect a cantilever with very good force sensitivity and position sensitivity that does not require optical detection. Instead it uses a SQUID to read out the change in flux in a nearby coil due to a magnetic particle that is attached to the cantilever. This cantilever may be applied in a range of situations, e.g. as a force sensor for Magnetic Resonance Force Microscopy, as a viscosity measuring device in mixtures of He3 and He4, or possibly as a low temperature thermometer. It may also be interesting to study the cantilever in its own right, because the regular phonon modes are all frozen out, leaving only the flexural modes. One might also be able to actively cool the cantilever to unprecedented temperatures.-			
Scientific objectives of the project (12 lines max): - I would like to come for a little more than two weeks. During that time I would like to do two things: - Learn about experimental details and design a sub-mK experiment for the cantilevers employing a copper nuclear demagnetization stage. For this it is important that there are one or two discussion partners with the necessary expertise that are willing to help me out. - If possible, I would like to do an experiment in which a cantilever is used to measure the viscosity of He4 (or a mixture of He3 and He4) at dilution refrigerator temperatures. I believe this could be possible if we can design and build the cell in Leiden, in which we mount the cantilever and coil and if we bring the necessary electronics to read out the SQUID and if the necessary wiring for the SQUID is prepared ahead of time. - - -			
Technical description of work to be performed (20 lines max): - In preparation of the experimental part of my visit I think we should go over the technical requirements in detail together. - - - - - -			

3. Joint Proposals / Funding

Is this project in collaboration with other (concurrent) projects at the infrastructure? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If yes, please specify:
Is this proposal submitted to any funding programmes? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
If yes, please specify:

The completed Application Form should be submitted to MICROKELVIN Management Office
(leena.meilahti@tkk.fi, fax +358-9-4512969)