

2008 CALLS FOR PROPOSALS Founded Projects

Major Topic	Action	Description	Labs	Funding k€
Life sciences at the limits of nanoelectronics	Chair of Excellence * Tetiana Aksenova * Full time	Implantable computer –brain interface Tetiana Aksenova is a leading expert in the field of machine learning and real time signal processing. Its project is the development of online system for brain signal decoding providing self-paced adaptative Movement Related Brain Computer Interface, a non-muscular channel to send the command to the external world using the measures of the brain functions.	LETI	437
Quantum Nanoelectronics	Chair of Excellence * Alexander Zaslavsky * Part time	Tunneling-based nano-FETs Alexander Zaslavsky conducts research on devices that could supplement the current silicon transistor-based microelectronics technology. The project is to pursue quantum tunneling-based nanodevices compatible with the semiconductor-on-insulator platform that can outperform standard end-of-the-roadmap transistors	IMEP LETI	279
Nanophotonics	Chair of Excellence * Marcelo Franca Santos * Part time	EPOCA: Emission Properties Of a semiconducting Cavity coupled to an Artificial atom. Marcelo Franca Santos is a theoretician specialized in quantum optics and cavity QED. The aim of the project is modeling the emission and absorption properties of the model system provided by a single QD coupled to a solid state cavity It will contribute to develop the interface between the quantum optics and the solid state physics communities.	Institut Néel INAC	195
Nanomodeling	Chair of Excellence * Leonardo Fonseca * Part time	NanoDeCa: nanometric devices calculated ab initio Leonardo Fonseca is an expert in theory and modeling of nanostructures. The program is to perform first principle simulations of low (SiO ₂) and high permittivity (HfO ₂) oxides on graphene focusing on interface issues, as well as quantum transport calculations of ultra-thin transistor channels using graphene on insulator model structures. The aim is to provide a clear understanding of such devices behavior at the atomic level.	LETI INAC Institut Neel	174
NanoMaterials & Molecular Electronics	RTRA project	POLYSUPRA: Redox supramolecular polymers: preparation, characterization and applications in molecular electronics The project consists in the study of metallo supramolecular polymers obtained from self-assembly of metal ions and bridging coordinating units. The program will focus on the preparation and characterization of the structures using light, neutron and X-ray scattering techniques while the interaction level between the species will be evaluated through rheometry.	DCM INAC LETI	251
Life sciences at the limits of nanoelectronics	RTRA project	NANOBIODROP: Nanodroplet chip for a controlled assembly of lipid layers and electrical detection of single-protein activity The project is focused on the formation of biomimetic membranes to study specific proteins insertion and their activity. It involves microfluidics, biology and electronic instrumentation. The aims are to create a new versatile tool for protein studies within bio membranes and to replicate biologic processes within a network of nanodrops to investigate protein activities (drug screening, for instance)	LEGI IBS	250
Nanomaterials	RTRA project	DISPOGRAPH: Graphen, from material to test devices The objective of the project which gathers the whole Grenoble community is to design devices based on graphene exceptional properties. It includes studies of the basic physical properties, development of the building blocks of graphene technology, realization of MOS-like structures, modelling.	Institut Néel IMEP LMGP LNCMI INAC	230
Nanomagnetism	RTRA project	IMAGE: injection of spins and magneto-optics in Ge(Mn) The aim is relating magnetic, electronic and transport properties in GeMn by making simultaneously magneto-optical and magneto-transport measurements on a single set-up. Optical magnetism dichroism and Kerr effect measurements will be associated to magneto-transport data to understand the coupling between nanostructures and carriers. EPR will be used to obtain fundamental magnetic properties of the samples.	INAC Institut Néel SPINTEC	220

Life sciences at the limits of nanoelectronics	Young incoming researcher * Martial Balland	MECCA: Contribution of 3D micro-environnement to cell adhesion The aim is to analyse quantitatively at the cell level the adhesive forces developed at the cell/cell interface and their coupling to cell/ECM adhesion. By modulating the biological conditions for adhesion and varying the physical properties of the local environment, it will be possible to test the cell ability to adapt the cell/cell interactions to the biomechanical properties of their environment.	SPECTRO iRTSV LTM TIMC	183
Nanophotonics	Young incoming researcher * Maxime Richard	RICOPHIN: radiation induced collective phenomena in nanowire-based nanostructures The aim is to get deeper understanding into the mechanisms of radiative coupling between individual emitters by taking advantage of large oscillator strengths offered by GaN and ZnO nanowires. The idea is to study radiative coupling and superradiance among a well defined ensemble of dots within a single nanowire.	Institut Néel	160
Nanomodeling	Young incoming researcher * Stephane Labbé	HM-MAG: hysteresis and modeling of magnetic nano objects. The aim of the study is to model the behavior of the magnetization in small objects in order to optimize their performances in complex systems. The work will be focused on the development of a mesoscopic model from the atomistic description of the material and on the understanding of the hysteresis which a strong characterization tool.	LJK Institut Fourier	132
Nanomagnetism	Ph.D Student	Mikhail KUSTOV Micromanipulation of nanoparticles using the diamagnetic levitation approach	G2ELAB	111
Nanomagnetism	Ph.D Student	Ales HRABEC Spin-torque-induced domain wall displacement in a compensated ferrimagnetic alloy	Institut Néel	111
Nanomagnetism	Ph.D Student	Irina GROZA Spin-torque effects in magnetic nanoparticules	SP2M	111
Nanophotonics	Ph.D Student	Xiaojun CHEN Selective growth of nitride nanowires for photonics applications	SP2M	111
Nanomodeling	Ph.D Student	Akash CHAKRABORTHY Non magnetic impurity induced ferromagnetism and effects of nanoscale inhomogeneities	Institut Néel	111
Nanomodeling	Ph.D Student	Arpan Krishna DEB Multiscale study of the charge effect on diffusion in silicon	SP2M	111
Life sciences at the limits of nanoelectronics	Ph.D Student	Radek BOMBERA Development of biochips dedicated to blood cell characterization	SPrAM	111
TOTAL (k€)				3510

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Support to Nanotechnology Platforms

Platform	Equipment	Funding (k€)
PFNC - CMTC PTA	Dual beam focus ion beam	1300
PTA	Operating expenses	300
	Improvement of the e-beam lithography instrument	70
NanoBio	Bio AFM	287
	Improvement of the measurement set-up	20
NanoFab	Laser lithography equipment	340
CIME	Oxidation furnace(part of)	100
TOTAL (k€)		2327

Support to Education and Scientific Animation

Major topics	Name	Place	Dates	Funding (k€)
COLLOQUES and SEMINARS				
Nanomagnetism	<u>European workshop on Self-organised Nanomagnets 2009</u>	Aussois	2009, March 29 th - April 3 rd	2,0
Quantum nanoelectronics	<u>Séminaires de Nanoélectronique Quantique</u>	Grenoble	weekly	6,5
Nanosciences	<u>TRANS'ALP NANO</u>	Lyon	2009, october 27 th - 29 th	2,5
Molecular electronics	<u>ELECMOL 08</u>	Grenoble	2008, December 8 th -12th	2,5
TOTAL (k€)				33,5