

Presentation of the funded projects in 2010 for the  
 « Ecotechnologies et Développement Durable » Programme

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Project title	BinThatThinks - BinThatThinks
<b>Abstract</b>	BinThatThinks project propose a innovative solution to waste management and waste recycling challenges. BinThatThinks introduces a global approach spanning eco-design to industrial developments. This requires to deploy pervasive sensing systems while preserving privacy. A first on the field application would be developed in the context of waste selective collecting. This application would enable to reject non compliant waste which today increases dramatically the cost for waste management operators. In addition, it would improve the feedback regarding the waste management process and products lifecycles for both waste management operators, the public collectivities, and ultimately the citizen.
<b>Partners</b>	INRIA Rennes - Bretagne Atlantique (coordinator) VEOLIA Proprete ETINEO SAS
<b>Coordinator</b>	Mr. Paul COUDERC - INRIA Rennes - Bretagne Atlantique paul.couderc@inria.fr
<b>ANR funding</b>	794 748 k€
<b>Starting date and duration</b>	January 2011 - 36 months
<b>Reference</b>	ANR-10-ECOT-001
<b>Cluster label</b>	

« Ecotechnologies et Développement Durable » programme  
**YEAR 2010**

<b>Project title</b>	<b>BIOGUARD</b> - Biosensor for the monitoring of the biodegradability and toxicity of drainwater and eparation process
<b>Abstract</b>	<p>BIOGUARD is a research project with industrial application for environmental instrumentation devoted to the development of a microbial biosensor applied to the effluent quality control (waste water treatment plant, draining water network...) before releasing into the environment. Thanks to BIOGUARD, cleaning systems managers will be able to anticipate every malfunctioning of their plants. The BIOGUARD project is supported by two main innovations:</p> <ul style="list-style-type: none"> <li>- A "biological innovation" that combines responses of several bacterial species in order to build an array of information for a better estimation of an effluent biodegradability and the toxicity.</li> <li>- A "technological innovation" that will apply the Microsystems concept in order to develop multisensors platform.</li> </ul>
<b>Partners</b>	<p>Université de Nantes - GEPEA (coordinator)            CNRS - LAAS            Université de Nantes - EA IREENA            CSTB            SUEZ            SOTRALENTZ            BIONEF</p>
<b>Coordinator</b>	<p>Mr. Gérald THOUAND - Université de Nantes GEPEA            gerald.thouand@univ-nantes.fr</p>
<b>ANR funding</b>	700 000 €
<b>Starting date and duration</b>	February 2011 - 36 months
<b>Reference</b>	ANR-10-ECOT-015
<b>Cluster label</b>	AXELERA

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**YEAR 2010**

<b>Project title</b>	<b>BIOPHY - Optimization of BIOdecontamination processes of contaminated aquifers with hydrocarbons by on-line geophysical and gas analysis monitoring</b>
<b>Abstract</b>	The BIOPHY project aims at developing an innovative methodology for the in situ treatment of groundwater contaminated by petroleum hydrocarbons. This implies to combine to a classical biological treatment (i) a real time monitoring of the process (based on geophysical measurements and measurement of gas flows from the ground) (ii) isotopic measurements, upstream and downstream of the treated area, (iii) an hydro-bio-geochemical modelling of the process, fed by data from initial diagnosis, monitoring in real time, and isotopic measurements. BIOPHY project will be conducted from laboratory to real size scale.
<b>Partners</b>	BRGM (coordinator) TOTAL SERPOL CNRS - LPC2E CNRS – Université de Montpellier 2
<b>Coordinator</b>	Mr. Jean-Christophe GOURRY - BRGM jc.gourry@brgm.fr
<b>ANR funding</b>	999 675 €
<b>Starting date and duration</b>	March 2011 - 46 months
<b>Reference</b>	ANR-10-ECOT-014
<b>Cluster label</b>	

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**YEAR 2010**

<b>Project title</b>	<b>CONVERGENCE 2 - When ecodesign becomes a source of innovation</b>
<b>Abstract</b>	<p>The ecological constraints are pointing the unsustainability of the current dominating model. One solution is to consider the environmental issue as an economical motivation. This approach focuses on the service delivered by the product instead of the product itself. This is also the purpose of eco-design. The first challenge would thus be to generalize eco-design practices. The firms would have to adopt new tools to support the design activity and to help the emergence of new competencies in terms of interface between technical quality/environmental quality.</p> <p>The aim of the Convergence project is to propose a guiding tool composed of three modules: strategic, methodological and operational. This tool will firstly help the given company to identify its appropriate eco-design strategy. This strategy will depend on the context of the company and will be based on the functionality economy.</p>
<b>Partners</b>	<p>Université de technologie de Troyes (coordinator) Arts et Métiers ParisTech - LSIS Université Joseph Fourier : Grenoble I - G-SCOP Université Jean Moulin - Lyon 3 - IAE IFTH Quiksilver</p>
<b>Coordinator</b>	<p>Mr. Nicolas BUCLET - Université de technologie de Troyes nicolas.bouclet@utt.fr</p>
<b>ANR funding</b>	<p>682 033 €</p>
<b>Starting date and duration</b>	<p>January 2011 - 36 months</p>
<b>Reference</b>	<p>ANR-10-ECOT-002</p>
<b>Cluster label</b>	<p>Materialia</p>

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<b>Project title</b>	<b>CreativERU</b> - Innovative concept for sustainable intensive urban wastewater treatment – Low carbon and low water footprint
<b>Abstract</b>	Franco-Chinese project. CreatiERU concern the treatment of the urban wastewater in term of low carbon and low water footprint and not only in term of removal of pollutants from wastewater. Then, the expected results should allow the development of a new and relevant positive-energy wastewater treatment plant providing high-quality use of treated water while reducing the whole plant footprint and the energetic cost of operation. This type of system could be a technological breakthrough with regard to conventional strategies of intensive treatment generally only defined to remove pollutants in respect with environmental regulations for water discharge in natural environment without optimisation of energy saving and intention of reuse water.
<b>Partners</b>	Université de Montpellier 2 (coordinator) LBE- INRA INSAT- LISBP VERI
<b>Coordinator</b>	Mr Alain GRASMICK - Université de Montpellier 2 alain.grasmick@univ-montp2.fr
<b>ANR funding</b>	848 883 €
<b>Starting date and duration</b>	February 2011 - 42 months
<b>Reference</b>	ANR-10-ECOT-003
<b>Cluster label</b>	TRIMATEC

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**YEAR 2010**

<b>Project title</b>	<b>DEMETHER</b> - DEvelopment of bioMatERials from agricultural byproducts for the THERmal insulation of existing buildings
<b>Abstract</b>	The aim of this project is to use oleaginous and cereal by-products in order to insulate the existing buildings by panels made of these by-products. The originality of this project consists in using matrix made of biopolymers (polysaccharides). This strategy enables to differentiate this project from other projects, which aims at using vegetable fibers with mineral matrix. Thus various biomaterials will be developed for the thermal insulation of existing buildings. This approach is coupled with environmental models in order to take into account the viability of these new materials and their industrial applications.
<b>Partners</b>	CEMAGREF - LISC (coordinator) Université Blaise Pascal Clermont II - LaMI Université Blaise Pascal: Clermont-Ferrand II - LGCB/UBP CEMAGREF - ITAP ENSACF GEMH / ENSCI
<b>Coordinator</b>	Mr. Jean-Denis MATHIAS - CEMAGREF - LISC jean-denis.mathias@cemagref.fr
<b>ANR funding</b>	790 740 €
<b>Starting date and duration</b>	January 2011 - 48 months
<b>Reference</b>	ANR-10-ECOT-004
<b>Cluster label</b>	VIAMECA et Céréales Vallée

<b>Project title</b>	<b>ECHIBIOTEB</b> - Innovating tools for sampling, chemical and biological analyses for the diagnostic of wastewater advanced treatments and sludge treatments
<b>Abstract</b>	The project ECHIBIOTEB follows the AMPERES project (PERCDD 2005) and it is meant to supplement the evaluation of wastewaters tertiary treatments and sewage sludge treatments that will be performed through the project ARMISTIQ (2010-2012). ECHIBIOTEB will more precisely involve the development or the improvement of knowledge on innovating chemical and biological analytical and sampling techniques and tools for the characterisation of water quality of urban waters and sludge before and after treatment. The tools and techniques that will be implemented during this project are the passive samplers for the improvement of sensitivity and representativity for the analysis of micropollutants, screening methodologies, in vitro and in vivo biotests, effect-directed analysis methodology and tests for the in situ characterisation of dissolved organic matter that might change the toxicity of micropollutants.
<b>Partners</b>	CEMAGREF (coordinator) SUEZ ENVIRONNEMENT Université Bordeaux 1 - LPTC Univ. Paris Sud XI INERIS Envolure
<b>Coordinator</b>	Mrs. Cécile Miège - CEMAGREF cecile.miege@cemagref.fr
<b>ANR funding</b>	601 270 €
<b>Starting date and duration</b>	February 2011 - 36 months
<b>Reference</b>	ANR-10-ECOT-005
<b>Cluster label</b>	AXELERA



## « Ecotechnologies et Développement Durable » programme

**YEAR 2010**

<b>Project title</b>	<b>EcoUse - Design for Use and Environment</b>
<b>Abstract</b>	Continuous efforts in design for environment have led to considerable reduction of the environmental load of human activities. Eco-technologies have allowed significant environmental gains but they will not be effective without efficient use. However, today, eco-technologies and eco-uses are seldom associated and the desired performances are never attained. This project aims at introducing the final user in the centre of the design process in order to globally decrease the impact of products on the environment. EcoUse propose to develop an eco-design method for products that integrates user characteristics (and the associated context of use) during product design so as to reduce the environmental load. Its goal is to construct the couple "technology-use".
<b>Partners</b>	Université Joseph Fourier – Grenoble 1 - G-SCOP (coordinator) Arts et Métiers ParisTech Institut Supérieur de Mécanique de Paris - LISMMA UTFPR (No funding requested)
<b>Coordinator</b>	Mr Daniel Brissaud - Université Joseph Fourier – Grenoble 1 – G-SCOP daniel.brissaud@inpg.fr
<b>ANR funding</b>	370 448 €
<b>Starting date and duration</b>	February 2011 - 43 months
<b>Reference</b>	ANR-10-ECOT-006
<b>Cluster label</b>	

## « Ecotechnologies et Développement Durable » programme

**YEAR 2010**

<b>Project title</b>	<b>EPEC - Running water purification systems</b>
<b>Abstract</b>	<p>By enhancing natural attenuation phenomena in running waters the EPEC project aims at improving the chemical state of these environments and at lowering the cost of water treatment for villages. It develops cost efficient ecological engineering solutions for free flowing waters.</p> <p>This industrial research heads towards :</p> <ul style="list-style-type: none"><li>- a scientific framework for relation between biofilm activity and water flow structure.</li><li>- engineering bases for several running water purification applications.</li></ul>
<b>Partners</b>	<p>IRH (coordinator) CEMAGREF CNRS-LRGP Fluvial.IS Université Claude Bernard : Lyon I - LSA</p>
<b>Coordinator</b>	<p>Mrs. Jolanda Boisson - IRH jolanda.boisson@irh.fr</p>
<b>ANR funding</b>	<p>947 355 €</p>
<b>Starting date and duration</b>	<p>January 2011 - 42 months</p>
<b>Reference</b>	<p>ANR-10-ECOT-007</p>
<b>Cluster label</b>	

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**YEAR 2010**

<b>Project title</b>	<b>ESPEER - Physical Inputs-Outputs including Environmental Extensions for a global management of resources</b>
<b>Abstract</b>	In view of analysing and understanding the interactions between human activities and the environment, ESPEER project intends to promote a method for a global assessment of the cycle of resources (materials) in the economy. The ambition is to provide political decision-makers, industrialists, and engineering companies with a means for environmental assessment embedded within the economical context and the technological opportunities and constraints, taking into account the availability of natural resources in a multiregional framework with France or Europe at its centre. It proposes to design a model and a tool capable of linking economic activity described according to the System of National Accounts (Supply and Use Tables – SUT) with its physical “mirror” of material flows extended to exchanges with the environment (waste and pollution generation, use of resources).
<b>Partners</b>	BRGM (coordinator) INPT - INPT CYCLECO Université de la Méditerranée Renault
<b>Coordinator</b>	Mr. Jacques Villeneuve - BRGM j.villeneuve@brgm.fr
<b>ANR funding</b>	759 977 €
<b>Starting date and duration</b>	January 2011 - 36 months
<b>Reference</b>	ANR-10-ECOT-008
<b>Cluster label</b>	

<b>Project title</b>	<b>OXYFILM - Plasma activated catalytic OXYdation in liquid FILM</b>
<b>Abstract</b>	The OXYFILM project is based on a highly multidisciplinary scientific approach and brings together expertise in the areas of catalysis, process plasmas, chemistry and physics. This project proposes to develop an innovative oxidation reactor to oxidize persistent organic pollutants present in aqueous effluents with reduced energy costs compared to conventional ozonation processes. This process consists in generating a non-thermal plasma discharge directly in the gas gap on the surface of the water to be treated. To optimize the use of the different physical and chemical processes generated by the discharge (radiation, momentum...), a gas-liquid reactor in which water flows as a thin liquid film on the surface of a counter-electrode coated with a catalytic material will be developed.
<b>Partners</b>	ENSCP-LGPPTS (coordinator) LRGP - ENSIC Université Pierre et Marie Curie - IJLRA
<b>Coordinator</b>	Mrs. Stéphanie OGNIER - ENSCP-LGPPTS stephanie-ognier@chimie-paristech.fr
<b>ANR funding</b>	481 326 €
<b>Starting date and duration</b>	January 2011 - 36 months
<b>Reference</b>	ANR-10-ECOT-009
<b>Cluster label</b>	

## « Ecotechnologies et Développement Durable » programme

**YEAR 2010**

<b>Project title</b>	<b>OZOFLOT</b> - Intensification of recovered cellulose fibres purification by ozone flotation
<b>Abstract</b>	<p>Paper recycling still suffers from some drawbacks. This is true especially when deinking, i.e. when removing ink from recovered papers, commonly by flotation, for producing higher quality pulps (printing and writing grade). This loss of raw materials combines with the consequent waste production and with the accumulation of some disturbing substances in the water circuits. The main origin of these features is a poor selectivity of the process intended to separate ink from the other pulp components, i.e. the flotation. The OZOFLOT project proposes to develop an alternative flotation treatment, based on ozone as reactive gas, instead of air as usually done. A preliminary study has shown the potential benefits of this approach for enhancing flotation selectivity, thus obtaining a higher process yield and a better pulp quality, potentially suitable for almost all applications, including graphic papers.</p>
<b>Partners</b>	Grenoble INP (coordinator) CTP KL ARMINES WEDECO
<b>Coordinator</b>	Mr. Davide Beneventi - Grenoble INP davide.beneventi@pagora.grenoble-inp.fr
<b>ANR funding</b>	734 646 €
<b>Starting date and duration</b>	Januray 2011 - 48 months
<b>Reference</b>	ANR-10-ECOT-010
<b>Cluster label</b>	AXELERA

<b>Project title</b>	<b>PETZECO - Petrochemical Effluents Treatment by Zeolites Combined to Ozone</b>
<b>Abstract</b>	Globally, both in France and China, the oil industry is faced with treatment of the refractory organic compounds. Classical operations of chemical oxidation or adsorption on activated carbon present limitations in term of cost and set up. Biological processes are often used in wastewater treatment but some organic compounds such as PAH, are refractory to biological degradation and can even be toxic for microorganisms and decrease their efficiency. The present project aims to develop a new advanced technique for the treatment of difficult industrial wastewater. The main idea of this project is to use ozone combined with innovative zeolite materials to associate a property of decomposition of ozone into hydroxyl radicals and adsorption property. This association should cause a synergy that can increase the degradation rates.
<b>Partners</b>	INPT (coordinator) INSA de Toulouse - SAIC Université de Montpellier 2 CNRS - ICGM TOTAL CRAES OWTC
<b>Coordinator</b>	Mrs. Marie-Hélène MANERO - INPT marie-helene.manero@iut-tlse3.fr
<b>ANR funding</b>	878 081 €
<b>Starting date and duration</b>	January 2011 - 42 months
<b>Reference</b>	ANR-10-ECOT-011
<b>Cluster label</b>	

## « Ecotechnologies et Développement Durable » programme

**YEAR 2010**

<b>Project title</b>	<b>RAFIA - Radiation cured fibers from agro-sourced monomers</b>
<b>Abstract</b>	RAFIA project aims at developing a new spinning concept for fiber industrial production at lower environmental impact and cost using radiation curing. The work program includes the synthesis, supply, formulation, extrusion and UV-curing at ambient temperature, solvent-free resins. A mixture of monomers and oligomers with photo-initiators are shaped into a fiber during extrusion and polymerized using UV radiation into a bio-polymer. The originality of this study is to combine both "green" material and process by using a UV-radiation energy source. This fiber is expected to exhibit a range of performances totally different from other fiber because of the specific macromolecular arrangement UV-curing systems may offer.
<b>Partners</b>	IFTH (coordinator) Université de Reims Champagne-Ardenne TVE
<b>Coordinator</b>	Mrs. Alice Baillié - IFTH abaillie@ifth.org
<b>ANR funding</b>	454 576 €
<b>Starting date and duration</b>	February 2011 - 42 months
<b>Reference</b>	ANR-10-ECOT-012
<b>Cluster label</b>	Industries et agro-ressources et UP-TEX

<b>Project title</b>	<b>REFORBA - Recycling of organic fraction contained in auto shredder residues</b>
<b>Abstract</b>	The objective of REFORBA project is to solve the environmental problem, which concern the plastics valorisation contained in the end-of-life vehicles (ELV). The constant increase of the plastics weight in the vehicles in one side, and the strict environmental legislations in another side, conduct to look for a scientific approach and a reliable technology of the plastics valorisation generated from ELV. This project envisages the valorisation, after refining of these two fractions in the iron and steelmaking lines. The first fraction will use as reducing agent in the metallurgical furnaces and the second one as secondary resources of iron in the oxide form. These installations need getting of the sufficient quality according to the define flow sheet of treatment which can be determined in this investigations by using the separation techniques (density, gravity, electrostatics and flotation separations) combined with the re-fragmentation and classification steps.
<b>Partners</b>	BRGM (coordinator) Recylux LEM-INPL AMMR INRS
<b>Coordinator</b>	M. Nour-eddine MENAD - BRGM n.menad@brgm.fr
<b>ANR funding</b>	677 748 €
<b>Starting date and duration</b>	January 2011 - 36 months
<b>Reference</b>	ANR-10-ECOT-013
<b>Cluster label</b>	