



European Cooperation in
Science and Technology

MONITORING PROGRESS REPORT

COST

Domain Committee : Materials ,Physics and Nanosciences

COST Action 540

*Photocatalytic technologies and novel nanosurfaces
materials critical issues (PHONASUM)*

**MONITORING
PROGRESS REPORT**

Period: from January 2006 – January 2007

This Report is presented to the relevant Domain Committee and contains two parts:

- I. Management Report prepared by the COST Office/Grant Holder*
- II. Scientific Report prepared by the Chair of the Management Committee of the Action*

The report is a “cumulative” report, i.e. it is updated annually and covers the entire period of the Action.

Confidentiality: the documents will be made available to the public via the COST Action web page except for chapter *II.C. Self evaluation*.

Based on the monitoring results, the COST Office will decide on the following year’s budget allocation.

I. Management Report prepared by the COST Office

I.A. COST Action Fact Sheet

Details

Draft MoU : 290/05

MoU: 313/05

Start of Action: 23/01/2006

CSO approval date: 14/06/2005

Entry into force: 14/10/2005

End of Action: 22/01/2010

Objectives

The main objective of the Action is to via a concerted European effort increase the fundamental knowledge of nanocrystalline photoactive materials and development of new products, which utilize self sterilizing and self cleaning photoactive materials in commercial applications. The Action will also concentrate on the development of EU standards for the characterization of photocatalytic materials.

Intentions to accept: list of countries and date

Country	Date	Country	Date	Country	Date	Country	Date
Austria	09/05/2006	Belgium	07/11/2005	Czech Republic	12/01/2006	Denmark	25/10/2005
Spain	24/11/2005	Finland	12/07/2005	France	20/10/2005	United Kingdom	12/07/2005
Greece	07/12/2006	Hungary	13/07/2006	Poland	06/10/2005	Serbia	09/08/2007
Sweden	28/02/2006	Slovenia	23/10/2006	Romania	01/01/2006	Ireland	01/01/2006
Switzerland	01/01/2006	Italy	01/01/2006	Bulgaria	14/10/2005	Portugal	23/01/2006
Total:	20						

Other participants

None

Website

<http://www.cost540.com>

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I.C. Overview activities and expenditures

Action 540
2007 - 2008 Budget

Total Action Budget 59000.00
Remaining Action Commitment 740.36

Meetings

Meeting Type	Date	Place	Cost	Status	Total
Working Group	8/10/2007	Florence (IT)	8.091	PAID	
Others	17/10/2007	Tokyo (JP)	640	Scanned	
Working Group	12/11/2007	Toulouse (FR)	6.717	PARTLY PAID	
Working Group	26/11/2007	Prague (CZ)	6.958	PARTLY PAID	
Others	13/12/2007	Brussels (BE)	869	PAID	
Working Group	30/03/2008	Unknown (BE)	14.080	PLANNED	
					37.355

STSM

Beneficiary	Date	From	Cost	Status	Total
Dr Jiri Zita	5/11/2007	Prague (CZ)	2.260	APPROVED	
Mr Pradeepan Periyat	21/01/2008	Dublin (IE)	1.500	APPROVED	
Dr Romana Cerc Korošec	17/09/2007	Ljubljana (SI)	1.380	APPROVED	
Dr Beata Tryba	4/02/2008	Szczecin (PL)	1.170	APPROVED	
Mr Niklas Hayek	28/02/2008	6020 Innsbruck (AT)	1.350	APPROVED	
Mr Vit Kalousek	4/02/2008	Prague 8 (CZ)	1.200	APPROVED	
					8.860

Workshops

Title	Date	Place	Cost	Status	Total
WG 1 meeting on "Light Sour	12/11/2007	Toulouse (FR)	1470	APPROVED	
Working Group meeting in co	26/11/2007	Prague (CZ)	980	APPROVED	
WG 1-3 Workshop meeting "	8/10/2007	Florence (IT)	1850	APPROVED	
					4300

General Support Grants

Title	Date		Cost	Status	Total
General	24/04/2007		2000.00		
					2000.00

Schools

Title	Date	Place	Cost	Status	Total
Training School on "Science	10/09/2007	Genova (IT)	5744.15		
					5744.15

Action Total 58259.64

**Action 540
2007 Budget**

Total Action Budget 28500.00
Remaining Action Commitment 7290.25

Meetings

Meeting Type	Date	Place	Cost	Status	Total
In conjunction with Workshop	18/04/2007	Prague/Rez (CZ)	18.300	PAID	
					18.300

STSM

Beneficiary	Date	From	Cost	Status	Total
					0

Workshops

Title	Date	Place	Cost	Status	Total
MC and WG2 in conjunction	18/04/2007	Rez/Prague (CZ)	2910	APPROVED	
					2910

General Support Grants

Title	Date		Cost	Status	Total
					0

Schools

Title	Date	Place	Cost	Status	Total
					0

Action Total 21209.75

**Action 540
2006 Budget**

Total Action Budget 60000.00
Remaining Action Commitment 4020.14

Meetings

Meeting Type	Date	Place	Cost	Status	Total
Management Committee	23/01/2006	Brussels (BE)	13.729	PAID	
Working Group	15/06/2006	Paris (FR)	8.199	PAID	
Working Group	26/10/2006	Lausanne (CH)	8.616	PAID	
Working Group	13/11/2006	Hannover (DE)	13.058	PAID	
					43.602

STSM

Beneficiary	Date	From	Cost	Status	Total
Ms Martina Astrova	28/04/2006	Prague (CZ)	1.500	APPROVED	
Dr Hana Mestankova	28/04/2006	Prague (CZ)	1.500	APPROVED	
Mr Matthew Crow	5/08/2006	Glasgow (GB)	1.500	APPROVED	
Dr Martina Astrova	13/11/2006	Prague 9, 199 02 (CZ)	1.500	APPROVED	
					6.000

Workshops

Title	Date	Place	Cost	Status	Total
Working Group 1 meeting "N	15/06/2006	Paris (FR)	1100	APPROVED	
Working Group 3 meeting "P	26/10/2006	Lausanne (CH)	1627	APPROVED	
Working Group 2 meeting "S	13/11/2006	Hannover (DE)	2650.53	APPROVED	
					5377.53

General Support Grants

Title	Date		Cost	Status	Total
General	26/09/2006		1000.00		
					1000.00

Schools

Title	Date	Place	Cost	Status	Total
					0

Action Total 55979.86

II. Scientific Report prepared by COST540 chair

II.A. Results achieved during the period January to December 2007

According to general plan and its milestones, the COST 540 Action participants effort continued to be focused to increasing the fundamental knowledge of nanocrystalline photoactive materials and the novel and important applications, which utilize self sterilizing and self cleaning photoactive materials. As verification of the performance of newly introduced photocatalytic technologies and products on European market seems to be one of the most of actual problems, the Action increased the effort to develop EU verification system as well as the standardization policy for the photocatalytic materials and applications.

The realization of these tasks is being accomplished through activities of existing WGs and their topical meetings as follows:

The Management Committee (MC) met at Rez u Prahy, Czech Republic, 18. April 2007. In January 2006. It was followed by *2nd meeting of COST540 Working Group 2, and international conference Photocatalytical applications, standardization and testing methods*, 19-20. April 2008.

WG 1: New Photocatalytically Active Nanomaterials and Coatings

The main aim of this WG is the preparation of new highly active photocatalytic nanomaterials and coating systems with increased sensitivity in the visible region of the solar spectrum, with high environmental stability and adaptability on the various substrate systems.

This working group organized meeting jointly with light sources activities called ***Light sources and new nanostructures for photocatalysis***, Toulouse, France, November 12, 2007

Significant progress was achieved in designing UV light sources

WG 2: Characterization and Standardization

The primary aim of this WG is to determine physical and chemical properties of photocatalytic nanomaterials and coating systems. There are several methods used for photoactive material characterization in different national laboratories. To unify testing procedures is very important task. With rapidly growing interest in photocatalytic technologies commercialisation, standardization of testing methods seems to be one of the key issues of further development of photocatalytic field. Japanese researchers already initiated ISO testing system, COST 540 has ambitions to contribute to establishing of European testing system. That shall to be harmonized with ISO and shall be filling up gap of non existing reference testing for some of existing applications..

2nd meeting of COST540 Working Group 2, and international conference ***Photocatalytical applications, standardization and testing methods*** was organized in Rez near Praha, 19-20. April 2008.

This meeting was more focused to verify already existing applications . One of meeting principal tasks was to collect info about verification testing methods to be used in laboratories of Action member countries to support industry .

Initiation Meeting of COST540 Strategic Group for European Standardization of Testing Methods in the Photocatalytic Field, Prague, Czech Republic, 26 November 2007

Introduction of the present status of standardization activities in the photocatalytic field and the position of COST 540, harmonizing with ISO , strategy towards CEN was agreed .with decision to establish photocatalytic materials TC –CEN . Minutes from this meeting are enclosed as very important .

COST 540 is pioneering verification system of this novel application field as well as CEN standards .

WG 3: Photocatalytic Cleaning and Sterilization Applications

The aim of this WG is to utilize new photocatalytically active nanomaterials and coating systems and technologies in specific industrially relevant application fields, especially in the areas of self-cleaning surfaces, anti-microbial surfaces, anti-fogging, water treatment, air purification and general hygienic applications.

Introduction of COST 540 program and its goals related to existing and achievable photocatalytic commercial products during RILEM conference was followed by 2nd meeting of COST540 Working Group 3 named as RILEM conference : *Photocatalytic technologies to construction materials*, Florence, Italy, 8-10 October 2007 .

There is no doubt that COST network of researchers is significantly contributing to success in many applications incl. RILEM conference topic

Number of participants joining COST 540 in 2007 increased. Extensive discussion on above mentioned conferences organized jointly with WG s meetings confirmed that **this Action, as only project bringing majority of European countries active on the photocatalytic field together** ,is important . Several new ideas were presented. There is no doubt that **COST 540 is pioneering testing standardization on the field**. Dialog with European committee for standartization (CEN-STAR) is very important and helpful . The fact that COST540 has become respected partner to Japanese and to other photocatalytic associations (leaders on the application field) is the best prove about the level of the international state of the art of the Action .

STSM (Short Time Scientific Missions) : 5 approved missions were accomplished

Some of them proved to be on high research level and bringing new results as eg. STSM of Dr.Zita to be hosted by Prof.Mills will be very helpful to design new reference testing methods to be proposed to CEN .

II.B. Dissemination of results

Web site www.COST540.com is giving the detailed info about all presented lectures on the meetings , reason of only brief explanation in this annual report about it . Web is regularly up dated for all actual news

- New leaflet describing COST 540 Action was prepared
- 4 conferences (seminars) were organized with presentations available on Action web page
- information about COST 540 was given on several other important conferences and meetings as eg. :

F. Peterka, J. Jirkovský, P. Sťahel, Z. Navrátil: Limits of application of photocatalytic technologies to construction materials, In: *International RILEM Symposium on Photocatalysis, Environment and Construction Materials*, October 8-9, 2007, Florence, Italy.

Peterka: Photocatalysis as Environmental Light Cleaning - Dreams and Reality, In: *Nanotechnology – Products and Processes for Environmental Benefit*, Institute of Nanotechnology, The Royal Society, Carlton House Terrace, London, UK, 16-17 , May 2007.

F. Peterka: Czech Research in the Field of Nanotechnology focused on applications and cooperation with Japanese partners, In: *Third Czech-Japan Science and Technology Days*, Tokyo, Japan, May 22-24, 2007.

F.Peterka : Brussels broakage event –7FP , December 2008

- Scientific and Technical Cooperation with :
 - CEN –STAR , to establish standard testing system
 - JPIA and TPIA , Japanese and Taiwan photocatalytic associations
 - many individual co. as eg. Millenium , Italcementi co. , Universtities

It was agreed that established experts network within COST540 will become basis for 7 FP project proposal in call Environment for verification of photocatalytic environmental technologies . Photocatalytic technologies acceptance in culture heritage area is other important topic often discussed. Summer school on culture heritage field in Genoa , September 2007 was actively supported