

ICTAC/TRS MEETING

HELD IN THE ECOLE DES MINES DE ST ETIENNE (FRANCE)

OCTOBER 25TH2004 – 11.00H-13H15

Present : Laura Montanaro (chairperson), G. Thomas (secretary), P. Llewellyn, P.

Lefort.

Excused : Pr. Gallagher A. Galerie have kindly sent a message to apologize not to participate in this meeting.

1- REPORT OF THE CHAIRPERSON LAURA MONTANARO

First a discussion is engaged on the future of TRS, after the last conference of ICATC13. The content is to be examined in the point 5 below.

In addition : L. Montanaro has published a page in ICTAC News in December 2003 and June 2004 (see web site)

A poster presenting the TRS activities in different conferences has also been prepared and used.

2- FINANCIAL

Expenses acknowledged:

1-expenses for the year 2003 for secretary (150 euros) and Web site (375 euros) have been engaged for 525 euros paid in January 2004.

In 2004 the TRS activities have been higher than in 2003, due to the ICTAC13 conference in particular, so it seems necessary to retain an amount of 600 euros for the functioning of TRS

2- Other expenses: payment 1/7/03 of 318,60 euros, hotel for Pr Kaitchev for his conference in the workshop “nucleation”,

3- For the congress *CIEC9 September 04*: about 2500 euros have been transferred to the organising committee as a contribution for the organisation of a TRS session in the framework of the conference. J. Rouquerol was the invited speaker of such session.

3- PARTICIPATION OF TRS IN SEVERAL MEETINGS

Meetings 2003:

1- workshop “nucleation” St Etienne (France) June 2003

Meetings 2004 supported by TRS:

1- JCAT35 (meeting of AFCAT, Association Française d’Analyse Thermique et Calorimétrie, member of ICTAC) annual meeting in St Etienne 11-13th May 2004 (organisation: G. Thomas, M. Pijolat)

2- The congress *CIEC9 sept 04 Bardonnecchia, Italy organisation: L. Montanaro, D. Negro*

3- In the workshop “*crystallisation3*” St Etienne November 2004 organisation : M. Cournil

4- NATAS meeting (September 2004) : Pr. Gallagher and Pr. Brown have presented a poster describing TRS activities

5- 6ème Colloque International sur la Corrosion et la Protection des Matériaux à Haute Température, May 2004, Les Embiez, France, (A. Galerie has proposed a TRS corner)

6-and - EUROCORR 2004, Sept. 2004 Nice.

7-Participation to ICTAC 13 held in Sardinia 12-18th September 2004 (A. Schiraldi) see annex 1 for TRS Session communications.

Preparation of the ICTAC13- TRS session: a common session between the TRS committee and the kinetics committee was envisaged by the president of ICTAC : In the Mulhouse congress (JCAT34) contacts between Jean Rouquerol, G. Thomas and Pr. Yoshida were established to try and join the two committees in organizing the same session. But Pr. Tanaka did not give any answer to our proposal and finally a special TRS session has been organized. As the TRS session did not appear in the final program, a gentlemen agreement was established to decide who could present oral communications and what could be interesting for our TRS community and the kinetics one.

ICTAC meeting : 11th 12th Laura Montanaro has been participating to the meeting between the different chair of the ICTAC committees (ICTAC scientific committee).

TRS session : 9h30-12h30

Finally an oral session devoted to TRS activities was held 16th September (G. Thomas chair with Pat Gallagher, Ph. Barnes, Ph. Llewellyn), with 5 oral communications. The TRS poster session was included in the general poster session (16 communications).

A short oral presentation of the poster has been done.

4- NEXT MEETINGS /

1: HETEROGENEOUS KINETICS CONFERENCE (JECH): TO BE HELD IN FRANCE (LIMOGES) ON MARCH 30TH AND APRIL 1ST 2005.

The TRS committee gives its agreement to sponsor a plenary conference in the field of the TRS topics.

2 : ESTAC MEETING In POLAND (Krakow) in September 2006:

Deadlines for organisation:

the organizing committee has set a deadline of November 2th of this year to decide the main topics of the ESTAC conference in 2006 following the Barcelona conference of 2002, where a TRS workshop was yet organised.

For the TRS session, the call for papers has been discussed : contents, topics,,and also a possibility of combining TRS topics with other ones to organise a wider session in agreement with the views of the local organising committee, directed by Pr Malecki .

Tentative TRS Program for ESTAC September 2006 in Krakow (Poland).

For ½ day or one day, depending on the topics.

Main topics :

- Mechanisms of reactions in the solid state.
- * Applications to inorganic material treatments (examples in metallurgy, ceramics, material science, earth science,...)
- * Solid state-based technology development (examples: fuel cells, sensors...)

This session would be devoted to the relation between fundamental research in reaction mechanisms and industrial applications. The study of reactions in the solid state can concern heterogeneous systems such as gas-solid, or solid-solid and solid-liquid systems.

The understanding of the mechanisms ought to bring a better knowledge of the behaviour of solids in reaction. This should bring the opportunity to develop chemical and material sciences, and allow the possibility to enhance technology developments : reactor design, electronics devices...

As a consequence the session will be partially devoted to the presentation of results in fundamental research, as well as to contributions from technological developments.

The materials studied will be mainly inorganic materials, and particularly not polymers. But simple organic compounds could be taken into consideration, for instance oxalates, carbonates, or acetates.

All the thermal treatments applied to crystallize or transform these materials can be considered : preparation of solids, thermal treatment of solids leading to materials of interest for different applications in metallurgy, ceramics, earth science. Of course all the thermal or calorimetric methods used to follow the reaction or characterize the solids will be considered of interest.

The elaboration of solids includes sol/gel methods and characterization of gels.

The thermal treatments considered could be those chosen in precursor or catalyst preparation, consisting of reactions like dehydration, decarbonation, ...

The study of ageing of solids implying temperature effects or gas interaction effects on the solids will be considered.

Oxidation of metal or alloys, and reduction of oxides will be also retained as heterogeneous model reactions.

Proposition to be sent after to
Pr. Françoise.rouquerol@eup.univ-mrs.fr
Then to Pr. Malecki

5- CHANGES IN THE TRS COMMITTEE

According to the wills of Laura Montanaro and Gérard Thomas, a change in the chairperson and the secretary of the TRS committee must be envisaged very soon.

At this point different strategic routes can be chosen for the future of TRS.

A possibility is to become a part of a structure yet existing in the ICTAC organization, for instance the kinetics committee.

A second one is preferred by the majority of the members present: to go on as a specific entity, but with a wider opening of TRS committee. This way is necessary to ensure the second part of the works developed in the TRS field by our committee.

In 2000, a first important mission of the TRS committee consisted in bringing the Eurosolid community in the ICTAC organisation so that this community could find its work's frame.

Now it seems that ICTAC has been recognizing the TRS committee as an integral part of the ICTAC committees, after the two main meetings in Barcelona and Chia Laguna.

Now a second action would be very interesting to develop the TRS community: finding new members in Europe where a cluster of TRS researches exists, establishing programs including different lab, so that TRS appears as a group with a speciality in heterogeneous kinetics. Such a collaboration could be a nucleus for European or world wide networks. The ESTAC conference could be a good opportunity to create this nucleus, and a platform of exchanges.

In France the CNRS council could be a partner of network collaborations.

The main reactions whose mechanisms are worth to be studied could be:

$G + S_1 = S_2$ ex. Corrosion, hydration...with applications sensors, nanotech.

or $S_1 = S_2 + G$ ex. Decomposition, surface reactions...

or $S_1 + S_2 = S_3$ ex Reaction sintering

or $L = S$ ex. Crystallization, preparation of powders doped at the nano scale

6- GENERAL INFORMATION : A NEW BOOK ON THERMAL ANALYSIS FROM

Prof. Jaroslav Sestak, MEng, PhD, DrSc

> Institute of Physics, Academy of Sciences

> Cukrovarnicka 10, CZ-16253 Praha 6

> phone +420 220318559 fax +420 233343184

Content : The book was written under a motivation force - the vision for making

> some new and imaginative dimension for a wider family of thermoanalysts as

> to compass their view of thermal science from a much broader spectacle.

> The book contains 400 pages with the text printed in two columns on the

> format 21x30cm (A4 coated paper) and is available on request at the

> publishing house:

> NUCLEUS, Divisova 882, CZ-50003 Hradec Kralove, Czech Republic

> (Email: info@nucleus.cz) for 89 Euro.

End of the meeting at 13.15 , October 25th

G. Thomas
Secretary of the TRS committee

ANNEXE 1 SESSION « THERMAL REACTIVITY OF SOLIDS » - ESTAC – Chia laguna
 11-17th September 2004 _ presentations: 1 key lecture, 6 oral, 16 posters

Title	Authors	Presentation	
		Poster	Oral
Determination by a calorimetric method of enthalpies of reactions occurring on the surface of impregnated activated fibers in contact with hydrogen sulfide	<i>L. Meljac, L. Perier-Camby, G. Thomas</i> Centre SPIN – Laboratoire des procédés en milieu granulaire, UMR CNRS 5148 – Fédération matériaux MatSpu 2145, Ecole Nationale Supérieure des Mines de Saint-Etienne, 158 Cours Fauriel, F42023 Saint-Etienne cedex 2 - FRANCE (tel: 04 77 42 02 84, fax: 04 77 49 96 94, meljac@emse.fr)	P	
Field of thermal properties of ruthenocuprate superconductors	<i>G. A. Costa</i> Dipartimento di Chimica e Chimica Industriale – Sez Physical Chemistry Via Dodecaneso 31 I16146 Genova - ITALY (tel: 39 (10) 35 36 113, fax: 39 (10) 36 28 252, costa@chimica.unige.it)	P	
Reactivity of solids in the synthesis and densification of advanced materials by spark plasma sintering	<i>A.M. Locci, A. Cincotti, R. Orrù and G. Cao,</i> Dipartimento di Ingegneria Chimica e Materiali, Unità di Ricerca del Consorzio Interuniversitario Nazionale per la Scienza e la Tecnologia dei Materiali, Università di Cagliari I09123 Cagliari - ITALY Società Consortile Promea Scarl c/o Dipartimento di Fisica, Cittadella Universitaria Strada Provinciale Monserrato – Sestu km 0,700 I09042 Monserrato (CA) - ITALY (cao@visnu.dicm.unica.it)		Key lecture
Experimental methods for the modelling of solid-state reactions: application to the oxidation of metals and the decomposition of powders	<i>F. Valdivieso, M. Pijolat, M. Soustelle</i> Centre SPIN – Laboratoire des procédés en milieu granulaire, UMR CNRS 5148 – Fédération matériaux MatSpu 2145, Ecole Nationale Supérieure des Mines de Saint-Etienne, 158 Cours Fauriel, F42023 Saint-Etienne cedex 2 - FRANCE (tel: 04 77 42 02 91, fax: 04 77 49 96 94, fvaldiv@emse.fr)		O
Investigation of ageing of ceramic sol-gel derived powders	<i>P. Llewellyn*, Fabrizio Merlo°, Jean Rouquerol*, Alfredo Negro°</i> *Laboratoire des Matériaux Divisés, Revêtements, Electrocéramiques		O

	(MADIREL, UMR 6121 Université de Provence-CNRS) - FRANCE ° Politecnico di Torino, Corso Duca degli Abruzzi, 24 – 10129 Torino - ITALY (Tel.: 39 (0)11 56 44 680, Fax 39 (0)11 56 44 665 laura.montanaro@polito.it)		
Reactivity in the system 2SrCO₃-Fe₂O₃	<i>J.P. Sanders, P.K. Gallagher, P.M. Woodward and I. Nishantha</i> Nat. Brick Resh. Cent. & Dept. of Chem. The Ohio State Univ. – USA		O
Incongruent decomposition reactions: a correlated microstructure, kinetics, structure and thermodynamic study (MKTS) of calcite decomposition	<i>D.T. Beruto* and A.W. Searcy°</i> *Facoltà di Ingegneria 16126 Genova – ITALY °University of California Berkeley – USA (dabe@unige.it)		O
Advanced thermal techniques for catalyst characterisation	<i>P.A. Barnes^{1*}, E.A. Fesenko¹, G.M.B. Parkes¹ and D. T. Lundie²</i> ¹ University of Huddersfield, Queensgate, Huddersfield, HD1 3DH ² Hidden Analytical Ltd., 420 Europa Boulevard, Warrington, WA5 7UN (* p.a.barnes2@hud.ac.uk)		O
Forest fire modelling: comparison of semi global mechanisms for the thermal degradation of fuels from Corsican scrub	<i>Dominique Cancellieri, Eric Leoni, Paul-Antoine Santoni, Valérie Leroy</i> SPE-CNRS UMR 6134, Université de Corse, Campus Grossetti, B.P. 52, 20250 Corte - FRANCE	P	
Characterisation of the catalytic properties of ceria-zirconia mixed oxides by temperature programmed techniques	<i>B. de Rivas, J.I. Gutiérrez-Ortiz, R. López-Fonseca and J.R. González-Velasco</i> Chemical Technologies for Environmental Sustainability Group, Department of Chemical Engineering, Faculty of Science and Technology, Universidad del País Vasco/EHU, P.O. Box 644, E-48080 Bilbao – SPAIN (Phone: +34-94-6012681; Fax: +34-94-6015963; E-mail address: igpgovej@lg.ehu.es)	P	
Defects in adsorption techniques as sources of artifacts in adsorption and calorimetric studies of catalytic reactions: killing out and accounting for	<i>Victor E. Ostrovskii</i> Karpov Institute of Physical Chemistry, ul. Vorontsovo Pole 10, Moscow, 105064 – RUSSIA (e-mail: vostrov@cc.nifhi.ac.ru)	P	
Title	Authors	Poster	Oral
Advanced kinetic tools for the evaluation of decomposition reactions	<i>B. Roduit⁽¹⁾, Ch. Borgeat⁽¹⁾, B. Berger⁽²⁾, P. Folly⁽²⁾, B. Alonso⁽³⁾, J.N. Aebischer⁽³⁾ and F. Stoessel⁽⁴⁻⁵⁾</i> ⁽¹⁾ Advanced Kinetics and Technology Solutions AKTS AG, TECHNO-Pôle		O

	<p>CH-3960 Siders – SWITZERLAND (http://www.akts.com)</p> <p>⁽²⁾ Armasuisse, Science and Technology Centre CH-3602 Thun – SWITZERLAND (http://www.armasuisse.ch)</p> <p>⁽³⁾ University of Applied Sciences of Western Switzerland CH-1705 Fribourg – SWITZERLAND (http://www.eif.ch)</p> <p>⁽⁴⁾ Swiss Institute for the Promotion of Safety & Security (SWISSI) CH-4002 Basel – SWITZERLAND (http://www.swissi.ch)</p> <p>⁽⁵⁾ Swiss Federal Institute of Technology (EPFL), Institute of Process Sciences CH-1015 Lausanne – SWITZERLAND (http://www.epfl.ch)</p>		
The Effect of Lead Pigments on the Drying of Cold pressed linseed oil by DSC	<p><i>R. White¹, P.S. Thomas², M. Philips¹ and R. Wuhler²</i></p> <p>1) Microstructural Analysis Unit 2) Department of Chemistry, Materials and Forensic Sciences University of technology Sydney, PO Box 123, Broadway, NSW 2007 - AUSTRALIA</p>	P	
Thermal and kinetic study of copper phenanthroline complex intercalated in γ-zirconium and γ-titanium phosphate	<p><i>Stefano Vecchio¹, Carla Ferragina², Romolo Di Rocco²</i></p> <p>¹ Dipartimento di Ingegneria Chimica, dei Materiali, delle Materie Prime e Metallurgia, Università di Roma “La Sapienza”, Via del Castro Laurenziano 7, 00161 Roma - ITALY ² CNR, Istituto di Metodologie Inorganiche e dei Plasmi, via Salaria km. 29.300, 00016 Monterotondo, Roma - ITALY</p>	P	
Non-isothermal dehydration and decomposition and of dl-lactates of transition metals and alkaline earth metals: a comparative study	<p>Ranjit K Verma, Lata Verma, M. Chandra & Anand Bhushan University Department of Chemistry, Magadh University, Bodh Gaya-824234 - INDIA (E-mail: rkvermamagadh@rediffmail.com)</p>	P	
Study of nanodispersive oxides for catalytic applications	<p><i>K. Wieczorek-Ciurowa^{1*}, A. Gomulczak¹, J. Rakoczy¹, J. Stoch² and K. Gamrat¹</i></p> <p>¹Faculty of Chemical Engineering and Technology, Cracow University of Technology, Warszawska 24, 31-155 Cracow – POLAND ²Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Niezapominajek 8, 30-239 Cracow - POLAND (*e-mail: kwc@usk.pk.edu.pl)</p>	P	
Title	Authors	Poster	Oral
Water adsorption on high-silica	<i>C. Busco,¹ A. Barbaglia,¹ V. Bolis,¹ and</i>	P	

zeolites: a microcalorimetric and computational ab initio study	<i>P. Ugliengo</i> ² ¹ DiSCAFF, Università del Piemonte Orientale “A. Avogadro”, Via Bovio 6, 28100 Novara - ITALY ² Dip.to di Chimica IFM, Università di Torino, Via P. Giuria 7, 10125 Torino - ITALY		
Kinetics of thermal decomposition of alkaline phosphates	<i>T. Vlase, Gabriela Vlase, N. Doca</i> West University of Timișoara, Faculty of Chemistry-Biology-Geography, Str. Pestalozzi No.16, Timișoara - ROMANIA, (tvlase@cbg.uvt.ro)	P	
Temperature Programmed Desorption (TPD) of carbon dioxide on alkali-metal cation-exchanged faujasite type zeolites	<i>Olaf Klepel</i> ¹ , <i>Bernd Hunger</i> ² ¹ Institut für Technische Chemie ² Wilhelm-Ostwald-Institut für Physikalische und Theoretische Chemie Universität Leipzig, D-04103 Leipzig - GERMANY	P	
Thermogravimetric analysis of the carbonisation of biomass-coal blends	<i>Ben Lindsey and Tim Mays</i> Department of Chemical Engineering, University of Bath – UNITED KINGDOM	P	
How to investigate gas-solid reactions involving minute mass changes?	<i>Marek Maciejewski and Alfons Baiker</i> Institute of Chemical- and Bioengineering, Swiss Federal Institute of Technology (ETH) 8093-Zurich - SWITZERLAND	P	
Determination of thermokinetic parameters from thermodynamic measurements of epoxy resin catalysed composite propellant	<i>A. Mouloud</i> Laboratoire des Systèmes Pyrotechniques, UER de Chimie Appliquée, B.P 17, EMP, Bordj-El-Bahri, Algiers - ALGERIA	P	
The effect of gas environment on rolling oil removal from cold-rolled steel as studied by thermogravimetry	<i>R. J. Pillar, A. K. Gibson</i> ⁺ , <i>W. A. Renshaw</i> [*] , <i>D. J. Willis</i> [*] , <i>W. R. Bell</i> ^x , <i>H. R. Brown</i> [#] , <i>S. R. Clarke, J. G. Matisons</i> School of Chemistry, Physics and Earth Sciences, Flinders University – SOUTH AUSTRALIA ⁺ Quaker Chemical (Australasia) Pty Ltd, 8 Abbott Road, Seven Hills, NEW SOUTH WALES [*] Metallic Coatings Research, Bluescope Steel, Port Kembla, NEW SOUTH WALES ^x Bluescope Steel, Springhill Works, Springhill Road, Port Kembla, NEW SOUTH WALES [#] Steel Institute, University of Wollongong, Wollongong, NEW SOUTH WALES	P	