



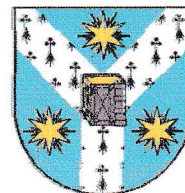
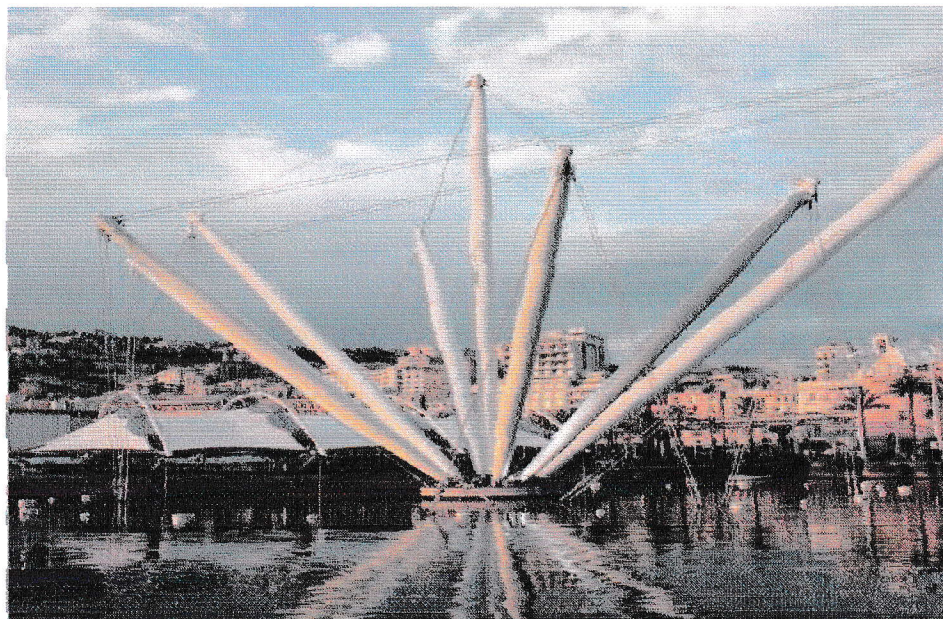
COST MP0904:

**Single- and multiphase ferroics
and multiferroics with restricted
geometries (SIMUFER)**

Closing Conference and
Final Management Committee Meeting

CNR-IENI: Institute for Energetics and Interphases, Genoa, Italy
30th January – 1st February, 2014

Book of abstracts





Closing COST MP0904 SIMUFER Conference and final MC meeting „Single-and multiphase ferroics and multiferroics with restricted geometries”

Institute of Energetics & Interphases IENI-CNR Genoa (IT)

January 30th - February 1st, 2014

Dear Participants,

Welcome to the last events of our COST MP0904 Action, Closing Conference and final MC meeting!

Our COST Action Single-and multiphase ferroics and multiferroics with restricted geometries “SIMUFER” (2010-2014) will conclude on May 30th, 2014. During its lifetime, its open and flexible character allowed both the consolidation of traditional collaboration but mostly, to start a large number of new projects and multi-lateral collaborations. Their large majority resulted in a high level of scientific knowledge, top publications and a large number of funded joint projects. Some of the most interesting collaborative results will be presented to this last scientific event, together with new results shown by a few top scientists from outside the Action

On behalf of the Management Committee, we can state that our COST Action network allowed, encouraged and supported an active exchange of people and knowledge, sharing of equipment, samples and fruitful discussions concerning the results. In particular, our Action has been recognised as one of the best not only for its scientific outputs, but also for promoting and supporting a very active participation of young researchers in all the Action-related activities: four conferences exclusively dedicated to young researchers, two training schools, more than 35 short term missions have been assigned to early stage researchers. Now it is the time to conclude our COST Action, to discuss and evaluate all our results during the Final MC meeting, to draw a few roadmaps in our field and to prepare for next forthcoming activities.

As it was pointed out within the Materials, Physical and Nanosciences Domain Committee meetings, our Action’s outputs are highly appreciated. Therefore, it was the only one Action from this domain chosen to be presented to the policy makers at the COST Science Night 2013 in Brussels. A strategic COST Workshop (MP0904 Action Showcase) to show the main scientific achievements of this Action and possible future roadmaps in our research field will be organised as a satellite event in Bucharest, during the Conference Electroceramics XIV (June, 16-20th 2014).

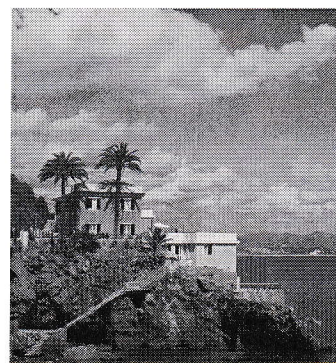
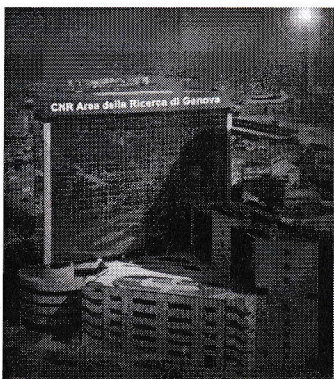
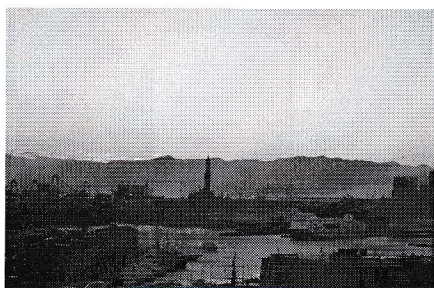
On behalf of the Organising Committee, we warmly welcome your participation to the Closing COST MP0904 Conference in Genoa, we wish you an interesting and fruitful conference and a nice stay in Genoa and we wait for you to the Action showcase in Bucharest (16-20 June 2014).

Chairs:

Dr. Vincenzo BUSCAGLIA, IENI-CNR Genoa (IT)
Prof. Paolo NANNI, IENI-CNR Genoa (IT)
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Dr. Giovanna Canu, IENI-CNR Genoa (IT)
Dr. Nadejda Horchidan (RO)
Mrs. Cipriana Padurariu (RO)



O 1	<u>I.Bretos</u>, R.Jiménez, A.Y.Wu, M.Tomczyk, P.M.Vilarinho, M.L.Calzada	Activated Solutions Enabling Low-Temperature Processing of Functional Ferroelectric Oxides for Flexible Electronics
O 2	A.Cazacu, C.Larosa, P.Beaunier, P.Nanni, L.Mitoseriu, <u>I.Lisiecki</u>	Self-organization and Nanocrystallinity Effects of 7 nm-Co Nanoparticles on the Magnetic, Vibration Properties and Oxidation Process
O 3	<u>D. Pérez-Mezcua</u>, R.Sirera, R.Jiménez, I.Bretos, C.De Dobbelaere, A.Hardy, M.K.Van Bael, M.L.Calzada	Study of Photosensitive Sol-gel Precursors for the Preparation of Lead-free $(\text{Bi}_{0.5}\text{Na}_{0.5})_{0.945}\text{Ba}_{0.055}\text{TiO}_3$ Thin Films at Low Temperature
O 4	A.S.Džunuzović, <u>N.I.Ilić</u>, J.D. Bobić, M.M.Vijatović Petrović, R.Grigalaitis, B.D. Stojanovic	Synthesis and Characterization of $x \text{BaTiO}_3 - (1-x) \text{NiFe}_2\text{O}_4$ Composites
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O 7	<u>E.Markiewicz</u>, K.Chybczynska, B. Andrzejewski, B.Hilczer	Dielectric and Magnetic Properties of Hot-pressed BiFeO_3-PVDF Composite Films
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O 12	<u>G.Philippot</u> , K.M.Ø.Jensen, G.Chevallier, C.Estournes, B.B.Iversen, C.Elissalde, M.Maglione, C.Aymonier	From $Ba_{1-x}Sr_xTiO_3$ (with $0 \leq x \leq 1$) Nanoparticle Synthesis in Supercritical Fluids to Advanced Nanostructured Ferroelectric Ceramics
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O 19	<u>L.Keeney</u> , N.Deepak, P.F.Zhang, A.Faraz	Liquid Injection Chemical Vapour Deposition of Ferroelectric/ Multiferroic Thin Films
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O 23	<u>N.Pavlovic</u> , H.Modarresi, J.D'Haen, C. de Dobbelaere, K.Temst, A.Hardy, M.K.Van Bael	Phase Formation Control in $BiFeO_3$ Films through Substrate Selection

O 24	<u>L.Padurariu</u>, C.Galassi, L.Mitoseriu	Modeling of the Dielectric Properties of Porous Ferroelectric Structures
O 25	<u>I.B.Misirlioglu</u> , M.Khodabakhsh, C.Sen, H.Khassaf, M.A.Gulgunand A.P.Levanyuk	Effect of Dopants on Phase Transition Characteristics of BiFeO₃ Powders, Properties and Phase Transitions of Ferroelectric-Paraelectric Superlattices

Synthesis and Characterization of x BaTiO₃ – (1-x) NiFe₂O₄ Composites

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Multiferroic composites with the general formula x BaTiO₃–(1-x) NiFe₂O₄ ($x = 0.5, 0.7, 0.8$) were prepared by mixing chemically obtained powders of nickel ferrite and barium titanate. NiFe₂O₄ powder was prepared by auto combustion method starting from nickel and iron nitrates. After ~ 4 h solvent was removed and during the process of self-ignition fine powder was obtained. Thermal treatment was performed at 1000 °C for 1 h and the nickel ferrite powder (NF) was formed. Barium titanate (BT) powder was prepared by a polymeric precursor method. Barium and titanium citrate solutions were prepared using barium acetate and titanium-isopropoxide. The obtained citrates were mixed and heated at 140 °C for ~ 5 h. Thermal treatments were further performed at 250 °C/1 h and 300 °C/4h, and after that in the temperature range 350-800 °C for 4h barium titanate nanopowder was formed [1]. Composites (BT-NF) with the general formula x BaTiO₃ – (1-x) NiFe₂O₄ were prepared by mixing obtained powders of nickel ferrite and barium titanate in planetary ball mill for 24h. Powders were pressed and sintered at 1170 °C for 4 h. X-ray measurements confirmed the presence of NF and BT phases. The microstructure of the ceramics showed formation of polygonal grains, (Fig.1, right). Magnetic measurements of composite materials were carried (Fig.1, left). Saturation magnetization moment of composite materials decrease with barium titanate amount and the fields at which saturation occur increase with BT content. The coercivity H_C (Oe) increases with barium titanate concentration in obtained multiferroic material.

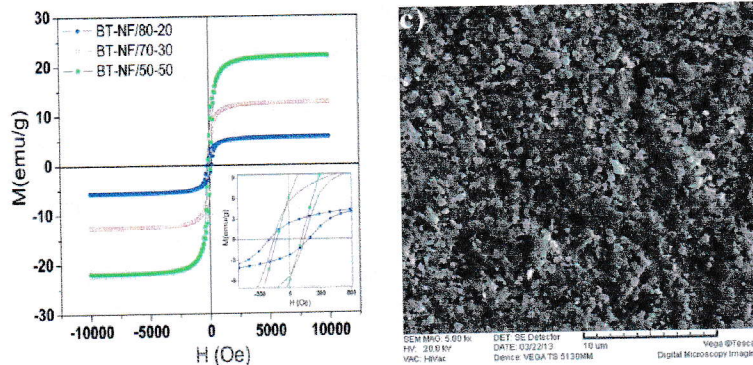


Fig. 1: Magnetic measurements and microstructure of x BaTiO₃ – (1-x) NiFe₂O₄ ceramics

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References

[1] M. Vijatovic Petrovic, J. Bobic, A. Radojkovic, J. Banys, B. Stojanovic: Ceram. Inter., 38, 5347 (2012)