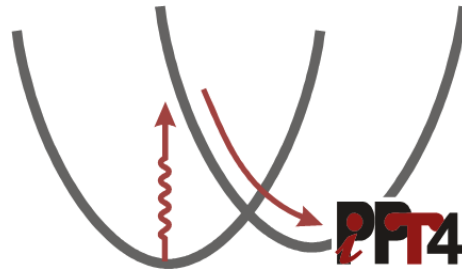


Selected papers presented at the
4th International Conference
Photoinduced Phase Transitions
and Cooperative Phenomena

June 28 – July 2, 2011, Wrocław, Poland



Editors of the Proceedings:

Tadeusz Luty, Aleksandra Lewanowicz

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POLISH ACADEMY OF SCIENCES
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Preface by Professor Tadeusz Luty

On behalf of the Organizing Committee, also my colleagues who have served as members of the International Scientific Committee, I would like to thank all participants of the *4-th International Conference on Photoinduced Phase Transitions and Cooperative Phenomena (PIPT₄)*. The conference took place in Wrocław and has been organized by Institute of Physical and Theoretical Chemistry, Wrocław University of Technology.

This conference continues the tradition of regular meetings on this fascinated and challenging research field. The 1-st and 2-nd International Conferences on Photoinduced Phase Transitions (PIPT) were organized in 2001 by Professor Keichiro Nasu in Tsukuba and then in 2005 by Professor Hervé Cailleau (with my cooperation) in Rennes. The 3-rd conference, which took place Osaka in 2008 has been organized by Professor Shin-ya Koshihara.

The 4-th Conference has been attended by more than 90 participants from many countries all over the world. By an intention of the International Scientific Committee the Conference has been devoted to uncover the mechanisms, structural changes, and dynamical pathways of cooperative transformations in condensed matter, also to new observation techniques. I believe that this Conference has been a forum for very fruitful discussions, offered some answers to questions we have addressed at the end of PIPT3 Conference in Osaka (2008), and finally has left us with even more fundamental and challenging questions for the future studies. I would like to express my hopes that this Conference stimulated cooperation and interest in this research field among our young colleagues from all over the world.

The Conference has been organized one year after Professor Yutaka Toyozawa has passed away. We all, nowadays fascinated by the field of photoinduced phase transitions, own Him respect and admiration for His achievements and contribution to science, theoretical papers and imagination which has formed solid foundation for the research we are now exploiting. It has been my personal honor and a duty to devote a part of the Conference to the session In Memoriam of Professor Yutaka Toyozawa.

The special issue of the *Acta Physica Polonica A*, contains a paper devoted to a history of the field and is dedicated to Professor Yutaka Toyozawa, and it is symptomatic that His, one of pioneering, papers on the photo-induced phenomena has been published in this Journal, at the occasion of the well-know and famous International School and Conference “Jaszowiec”.

I do hope that the Proceedings will serve not only as a summary of our Meeting but also as a kind of reference for the next Conference, PIPT5, which will be kindly organized by Professor Dragan Mihailovic in Slovenia in 2014.

Finally, on behave of the Organizing Committee I would like to express my sincere thanks to the host University, Wrocław University of Technology and the Dean of Chemistry Faculty for support. It is a great pleasure to express our sincere thanks to Japanese colleagues, Professor Shin-ya Koshihara and Professor Hiroshi Okamoto for supporting our organizational affords by devoting a part of their grants to the Conference.

Tadeusz Luty, June 28, 2011

chairman of PIPT₄

INVITED SPEAKERS

Shin-ichi Adachi, KEK, Tsukuba, Japan
Damien Baigl, École Normale Supérieure, Paris, France
Jean-Yves Bigot, University of Strasbourg, France
Uwe Bovensiepen, University of Duisburg-Essen, Germany
Jure Demsar, University of Konstanz, Germany
Daniele Fausti, University of Hamburg, Oxford, Germany/UK
Hyocheol Ihee, KAIST, Korea
Sumio Ishihara, Tohoku University, Japan
Steven L. Johnson, Paul Scherrer Institut, Switzerland
Alexey V. Kimel, University of Nijmegen, The Netherlands
Shin-ya Koshihara, Tokyo Institute of Technology, Japan
Maciej Lorenc, Université de Rennes 1, France
Dragan Mihailovic, JSI, Ljubljana, The Republic of Slovenia
R. J. Dwayne Miller, University of Toronto, Canada
Gábor Molnár, CNRS, Toulouse, France
Naoto Nagaosa, University of Tokyo, Japan
Keiichiro Nasu, KEK, Tsukuba, Japan
Keith Nelson, MIT, USA
Hiroko Tokoro, University of Tokyo, Japan
Hiroshi Okamoto, University of Tokyo, Japan
Łukasz Radosiński, Wrocław University of Technology, Poland
Katsumi Tanimura, Osaka University, Japan
Philipp Werner, ETH, Zurich, Switzerland
Kenji Yonemitsu, IMS, Okazaki, Japan

TOPICS:

The Meeting was intended to review the very recent achievements and inspire new challenges in the field of the photo-induced phase transitions and cooperative phenomena. Special interest is focused on the following topics:

Concepts and modeling

Cooperative mechanisms of proliferation and transformation pathway

Coherence and control

Chemical reaction approach including energy conversion

Far away from equilibrium dynamics

Nanoscale phenomena

Directing transformation and functionality of materials by light

Structural (from strongly correlated to biological super structure systems)

Optical and electrical

Magnetic and dielectric

Mechanical

Transport properties including superconductivity

Time-resolved techniques to study ultra-fast cooperative transformations

Spectroscopy from soft X-ray to THz

X-ray and electron scattering and diffraction

Imaging and microscopy

Novel techniques