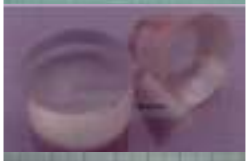
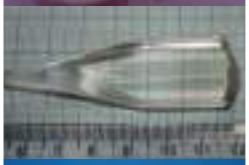
INDIAN ASSOCIATION FOR CRYSTAL GROWTH

February 2014 | Issue 26





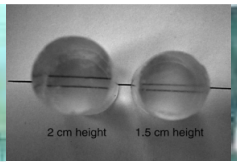





IACG NEWS LETTER

In this Issue

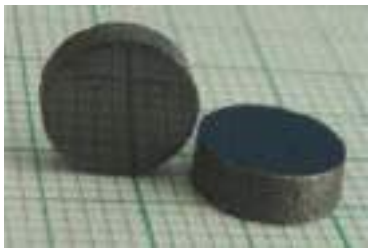
Flat-top growth technique to increase the device purpose yield of KDP crystals	Polystyrene (PS) polymer coated L-LMHCl single crystals to enhance the physical properties



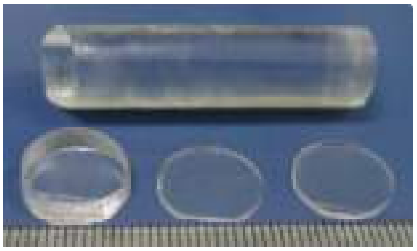




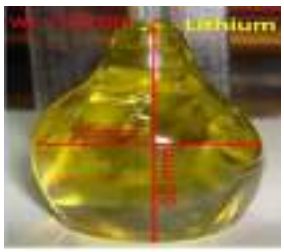
RECENTLY GROWN TECHNOLOGICALLY IMPORTANT SINGLE CRYSTALS



$LiInSe_2$-Prof.P.Ramasamy et. al, CGC, SSNCE

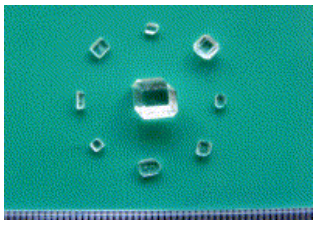


Above T_c grown TGS crystal Dr.Muthu Senthil Pandian et. al. SSNCE



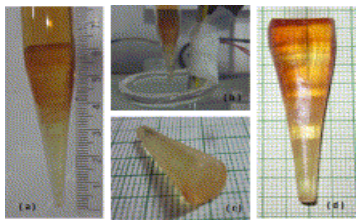
Lithium Niobate- Dr.G.Bhagavannarayana

$DyMnO_3$-Dr.Suja Elizabeth, IISc, Bangalore



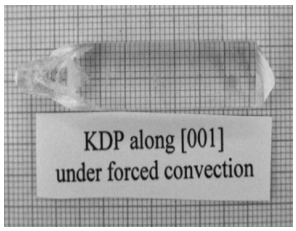
L-GAHB-Dr.K.Srinivasan Bharathiyar University

4-ABP-Dr.R.Ramesh Babu Bharathidasan University

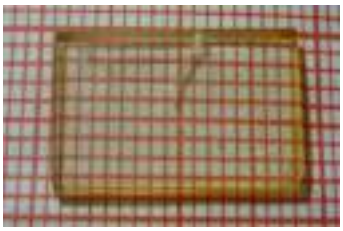


M2A5B-Dr.R.Gopalakrishnan Anna University

Dye doped ZTS-Dr.Binay Kumar, University of Delhi



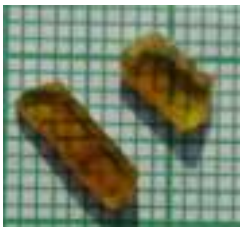
SR grown KDP Crystal Dr.Sunil Verma, RRCAT



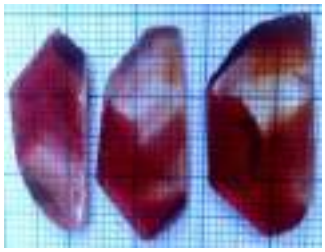
PMPT-Dr.S.Bragadeeswaran BIT-Anna University, Trichy

Br1-Dr.S.Kalainathan VIT University

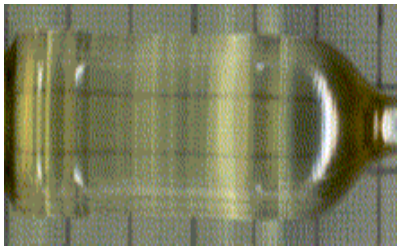
MNA-Dr.R. Ezhil Vizhi-VIT University



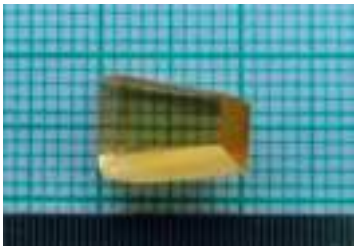
4NAABA-Dr.P.Rajesh et. al. CCG, SSNCE



Dye doped LAP-Dr.R.Mohan Kumar, Presidency College



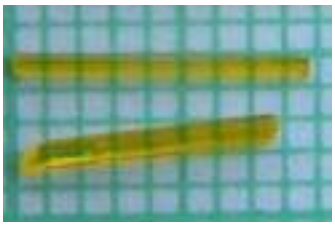
$NaBi(WO_4)_2$-Dr.S.C.Gadkari BARC, Mumbai



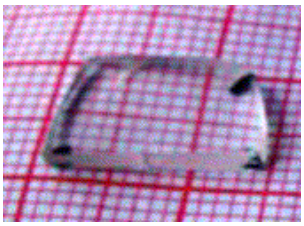
DIAC-Dr.G.Anandha Babu et.al, CCG, SSNCE

PCHP-Dr.S.P.Meenakshi -sundaram, Annamalai Univ

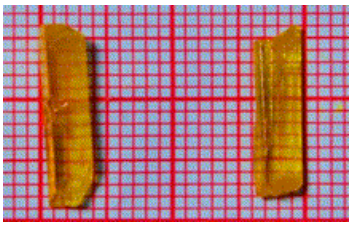
TGZC-Dr.S.Jerome Das Loyola College



TMBC-Dr.S.M.Dharmaprakash et.al, Mangalore University

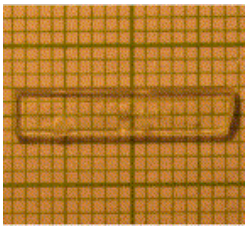


YCB-Dr.R.Arun Kumar PSG College of Technology



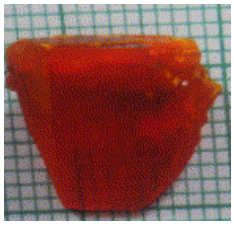
N,N-dimethylurea Picrate- Dr.P.Selvarajan, ACAS

IIP-Dr.P.Murugakoothan Pachaiyappa's College, Chennai

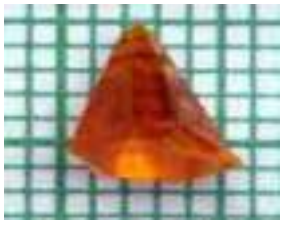


L-LN-Dr.Tanusree Kar IACS, Kolkatta

Bi_2Te_3- Dr.N.Vijayan, NPL



TSCPACd- Dr.K.Ramamurthi



3NAA Crystal-Dr. J. Madhavan Loyola College

Editorial Message

It is a great pleasure for me to present you the TWENTY SIXTH issue of IACG NEWS LETTER-2014. An enthusiastic note is that the number of the IACG members is increasing tremendously. To date we have about 300 life members. The immense support and encouragement we have been receiving from the Indian Crystal Growth Community has given us enthusiasm to bring out the Twenty Sixth Issue of our IACG News Letter. This newsletter makes aware of achievements and the new developments achieved by the Crystal Growth community in India. The objectives of the association are to promote, encourage and develop the theory and practice of growth of Crystals, to organize Conferences, Seminars, Workshops etc., in various parts of the country, to educate the people at different levels and offer a proper platform for reporting and discussing new developments in the field of Crystal Growth.

We have successfully organized SEVENTEEN Crystal Growth seminars, many of them with International Participation. The present "XVIII National Seminar on Crystal Growth" is a major event for us involving several Senior and Young Scientists. This seminar is sponsored by DST-SERB and CSIR. More than 200 abstracts have been selected from many National Laboratories, Universities and Research Institutes for Contributed Papers. We have more than 30 Invited Lectures from well established Crystal Growth Laboratories. The lectures cover wide spectrum of Crystal Growth and Characterization of advanced materials: Theoretical aspects, Kinetics of Crystal Growth, Experimental aspects of Crystal Growth, Solution Growth, Sankaranarayanan-Ramasamy (SR) method, Melt Growth, Novel Materials, Industrial Crystallization, Crystal Characterizations, Semiconductor and Optoelectronic Crystals and Crystal Devices.

The International Organization for Crystal Growth (IOCG) assembly was held on 14th August 2013 in Warsaw, Poland. 36 members from all over the world attended and held discussion on Crystal Growth activity.

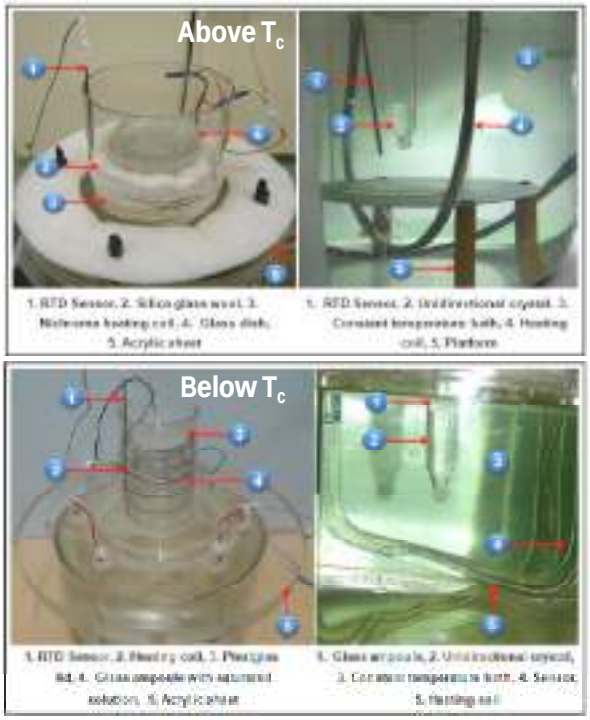
Every effort has been made to bring to you the most of the news in a brief manner.

International Organization for Crystal Growth (IOCG) Assembly

Dr. Muthu Senthil Pandian
Editor, Indian Association for Crystal Growth-News Letter, Issue-26

Sankaranarayanan - Ramasamy (SR) Method of Crystal Growth

- **Sankaranarayanan-Ramasamy (SR) method** was discovered in the year 2005.
- **117 Papers** have so far appeared in International Peer Reviewed Journals.
- **28 Journals** have published SR method papers.
- **123 Researchers** published papers in SR method.
- **9 Projects** have been funded (BRNS, DST, AICTE, UGC, CSIR).
- Several laboratories in India and abroad are growing crystals by SR method.
- **1350 mm length and 55 mm diameter** Benzophenone crystal was grown by SR method.
- **Positive** & **Negative solubility material, High, moderate** and **low solubility materials** were grown by SR method.



TGS single crystals grown in ferroelectric and paraelectric phases by unidirectional method: a novel observations and investigations

Single crystals of <010> directed triglycine sulphate (TGS) have been grown from aqueous solution at 36°C in ferroelectric phase and 55°C in paraelectric phase by Sankaranarayanan-Ramasamy (SR) method at **Dr.Sunil Verma's Lab, LMDDD, RRCAT, Indore**. The influence of below and above Curie point of TGS on the growth rate, ferroelectric, dielectric, defects, mechanical and optical properties have been investigated. From the results it can be inferred that the above T_c grown crystal is a potential material for infrared (IR) detector applications, because of their higher value of spontaneous polarization (P_s), coercive field (E_c), dielectric permittivity (ε_r), microhardness (H_v) & lower value of dielectric loss, EPD. Similarly L-alanine and Urea doped TGS was also grown for above and below T_c.

Most Cited Articles in SR method of Crystal Growth

No	Authors	Journal	Title	Citations
1	**K. Sankaranarayanan** **P. Ramasamy**	*Journal of Crystal Growth*, Vol.280, pp. 467-473, **2005**	Unidirectional seeded single crystal growth from solution of benzophenone	**87**
2	**M. Senthil Pandian** **N. Balamurugan** **V. Ganesh** **P.V. Raja Shekar** **K. Kishan Rao** **P. Ramasamy**	*Materials Letters*, Vol.62, pp. 3830-3832, **2008**	Growth of TGS single crystal by conventional and SR method and its analysis on the basis of mechnical, thermal, optical and etching studies	**42**
3	**N. Balamurugan** **P. Ramasamy**	*Crystal Growth and Design*, Vol.6, pp. 1642-1644, **2006**	Investigations of the growth rate formula and bulk laser damage threshold KDP crystal growth from aqueous solution by the Sankaranarayanan-Ramasamy (SR) method	**34**

Novel work done in Crystal Growth

Flat-top growth technique to increase the device purpose yield of KDP crystals

A growth technique has been reported [1] to increase the usable volume fraction of KDP crystals for electro-optic modulators and SHG elements for high power laser applications. The technique is based on utilization of solution-vapor interface for shape modification of KDP crystals using platform technique. The grown crystals were characterized for optical and structural perfection showing good quality. KDP crystals with dimensions as large as 116 × 92 × 116 mm^3 and mass 2.6 kg were grown from point seed as shown below without any nucleation.

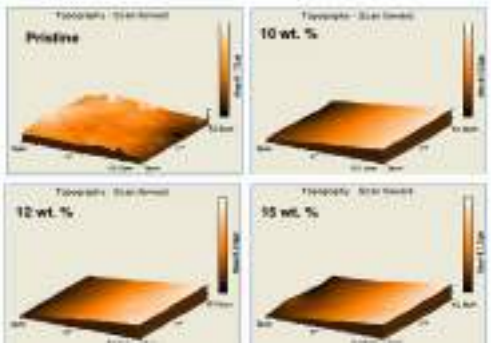
Dr. S. K. Sharma
Scientific Officer-E
Laser Materials Development Devices & Division,
RRCAT
Indore-452 013
Madhya Pradesh

Dr. Sunil Verma
Scientific Officer-F
Laser Materials Development Devices & Division,
RRCAT
Indore-452 013
Madhya Pradesh

Reference:
1. **S. K. Sharma*,** Sunil Verma, Yeshpal Singh and K.S. Bartwal, **"Growth technique to increase device purpose yield of KDP crystals and assessment of its quality using X-ray and optical techniques",** Crystal Engineering Communications, 2013, **15**, 9955

Polystyrene (PS) polymer coated L-Lysine Monohydrochloride Dihydrate (L-LMHCl) single crystals to Enhance the Physical Properties

L-LMHCl single crystals coated with PS layer at different concentrations have improved surface smoothness and decreased surface scattering of laser beam. The refractive index increases with increasing thickness of PS coating. From LDT experiment, it is confirmed that the surface damage resistance is high for the PS coating thickness of 1.8 μm formed from 15 wt.% PS concentration. Hence, it can be concluded that the quality of the L-LMHCl crystal surface was not deteriorated due to the PS coating rather than it enhances the optical properties of the crystal. Among PS coating from various concentrations, coating from 10 wt.% advantageously improves the surface smoothness, refractive index, and reduces the surface scattering of the crystal.



Dr. R. Ramesh Babu
Assistant Professor
Crystal Growth and Thin Film Laboratory
Department of Physics
Bharathidasan University
Thiruchirappalli-620 024
Tamilnadu
Email: rampap2k@yahoo.co.in

Reference:
1. V. Vasudevan**, R. Ramesh Babu*,** K. Ramamurthi, **"Surface topography and optical studies on polystyrene (PS) coated l-Lysine monohydrochloride dihydrate (L-LMHCl) single crystals",** Materials Letters, 2012, **68**, 277-279.

International Conference / Laboratory Visit

Prof.P.Ramasamy and his students with **Prof.M.Schieber,** Editor, Journal of Crystal Growth

Prof.P.Ramasamy with **Prof.A.M.Petrosyan,** Head, Molecular Structure Research Centre, Armenia

The 17th International Conference on Crystal Growth and Epitaxy was held at Warsaw, Poland. Totally 10 general sessions and 9 topical sessions were organized which included both oral and poster presentations. This year (2013) is announced as a year of Jan Czochralski in Poland. He discovered the Czochralski method which is also known as crystal pulling. This method is widely known for growing single crystals from the melt. From this method we can grow bulk single crystals for semiconductor and solar cell applications. Over 650 delegates attended the conference from various universities/Institutions, research laboratories and Industries all over the world. From India 114 papers were selected for both oral and poster presentations. 13 papers were contributed from SSN college of Engineering. Seven members got the financial support to attend and present their papers in the conference. 5 papers were published in the Journal of crystal growth .

Dr. D. Rajan Babu, Professor, Department of Physics, School of Advanced Sciences, VIT University, Vellore was invited to the **Research Institute of Electronics, Shizuoka University, Hamamatsu, Japan** as 'Visiting Professor' from 01 June to 31 August 2013. Shizuoka University is a National university in Japan. He made a presentation to the research group of this institute about the research facilities available in VIT, research progress in our lab and the plan of his visit. He held discussions with Prof. Hayakawa, Head of the research group on the feasibility of starting an Indo-Japan project and collaborating with VIT University. He also attended the "Asia Pacific Conference on Green Technology with Silicides and Related Materials (APAC- SILI CIDES 2013)" , an International Conference held from the 27-29, July 2013 at the University of Tsukuba, Japan. This helped him to gain new insights on research.

Dr. A.T. Ravichandran, Associate Professor, PG and Research Department of Physics, National College, Trichy presented in the Seventh International Conference on Materials for Advanced Technologies (ICMAT-2013) held at Singapore during 30th June to 5th July 2013. Nobel Laureate Professor Yuan-Tseh Lee of Academia Sinica in Taiwan, and President of the International Council for Science, declared the official opening of the 2013 ICMAT. ICMAT2013 featured over 30 symposia representing the latest in materials for advanced technologies, approximately 2,500 scientists and researchers from 55 countries gathered here to discuss the latest developments in materials science, Under the inspired guidance of Prof. B.V.R. Chowdari.

YOUNG/SENIOR RESEARCHERS FORUM

Top 2 Scientists - Highest Number of Publications in Crystal Growth

Prof. P. RAMASAMY
President-Indian Association for Crystal Growth
Dean (Research)
SSN College of Engineering, Kalavakkam
Chennai-603 110, Tamilnadu

660 Publications

Dr. G. BHAGAVANNARAYANA
Chief Scientist and Head
Crystal Growth and Crystallography Section
National Physical Laboratory
New Delhi-110 012

245 Publications

Dr. Muthu Senthil Pandian, Research Scientist, SSN Research Centre, SSN College of Engineering, Chennai-603 110, Tamilnadu has received the following TWO Awards in 2013

YOUNG RESEARCHER AWARD
for his Overall Performance in Crystal Growth from NCAMA-2013 held at NIT-Trichy during April 4-5, 2013. This award was given by Optical Society of America.

YOUNG RESEARCHER AWARD
for his Outstanding Contributions in the field of Crystal Growth from NCRTAM-2013 held at GRD Centre for Materials Research, PSG Technology, Coimbatore during Dec 16-17, 2013.

Dr. R. Gopalakrishnan, Associate Professor, Crystal Research Lab, Department of Physics, Anna University, Chennai has received the "***Active Researcher Award-2013"*** from CTDT, Anna University, Chennai-25.

PATENT FILED

Inventors: **Dr. S. Brahadeeswaran**
Mr. K. Thirupugalmani
Mr. G. Shanmugam
(Department of Physics, BIT Campus, Anna University, Trichy-620 024)

Title: **Rapid Growth of Thin and Flexible Organic Semiconductor Single Crystals Using Modified Solution Technique**
Patent Number: **1584/CHE/2012**

Books by Prof. S. Kalainathan

Title: Materials Science
Author: Prof. S. Kalainathan
Year: 2011
Publisher: RBA Publishers, Chennai

Title: Modern Physics
Author: Prof. S. Kalainathan
Year: 2010
Publisher: Anuradha Publications, Chennai

Book by Prof. Rajnikant

Title: Pharmaceutical Drug Polymorphism: A Crystallographic Review of Aspirin, Paracetamol and Norfloxacin

Author: Rajnikant, Vivek Gupta, Preetika Sharma
Year: 2013
Publisher: Lambert Academic Publications GERMANY

BEST PAPER AWARDS

M. Magesh, Centre for Crystal Growth, SSN CE received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, 9-11, Jan 2013

S. Anandhi, CRL, Anna University, Chennai received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, 9-11, Jan 2013

R.K. Balachandar, Centre for Crystal Growth, VIT University received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, 9-11, Jan 2013

K. Thirupugalmani, Anna University, BIT-Campus, Trichy received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, 9-11, Jan 2013

Nidhi Tyagi, Department of Physics, University of Delhi received **BEST POSTER PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, 9-11, Jan 2013

K. Senthil, VIT University received **BEST POSTER PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, Chennai, 9-11, Jan 2013

M. Rajalakshmi, Anna University, Chennai received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, 9-11, Jan 2013

K. Aravinth, Centre for Crystal Growth, SSN CE received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, 9-11, Jan 2013

K. Boopathi, Centre for Crystal Growth, SSN CE received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, Chennai, 9-11, Jan 2013

Anuj Krishna, NPL, New Delhi received **BEST ORAL PRESENTATION AWARD** in the XVII National Seminar on Crystal Growth held at Anna University, Chennai, 9-11, Jan 2013

Dr. Muthu Senthil Pandian, SSN RC, Chennai received **YOUNG RESEARCHER AWARD** in the NCRTAM-2013 held at PSG College of Technology, Coimbatore, 16-17, December 2013

S. Karuppusamy, Anna University, Chennai received **BEST ORAL PRESENTATION AWARD** in the NCAM-2013 held at St. Mary's College, Thoothukudi, 15-16, February 2013

Dr. Muthu Senthil Pandian, SSN RC, Chennai received **YOUNG RESEARCHER AWARD** in the NCAMA-2013 held at NIT, Trichy, 5-6, April 2013

P. Vijaykumar, Centre for Crystal Growth, SSN CE received **BEST ORAL PRESENTATION AWARD** in the NCAM-2013 held at St. Mary's College, Thoothukudi, 15-16, February 2013

Dr. Usha Kannan, S.T. Hindu College, Nagercoil received **BEST ORAL PRESENTATION AWARD** in the National Seminar on Recent Trends in Crystal Growth and Nanomaterials at The National College, Trichy on March 13-15, 2013

A. Arunkumar, Centre for Crystal Growth, SSN CE received **BEST ORAL PRESENTATION AWARD** in the II NACM-2013 held at PSN College of Engineering and Technology, Tirunelveli, 23-25, January 2013

A. Arunkumar, Centre for Crystal Growth, SSN CE received **BEST ORAL PRESENTATION AWARD** in the NSETGCSCN-2013 held at Sacred Heart College, Chalakudy, 11-12, March 2013

M. Sukumar, Bharathidasan University, Trichy received **BEST ORAL PRSENTATION AWARD** in the NCRTAM-2013 held at PSG College of Technology, Coimbatore, 16-17, December 2013

X-ray topography facility at RRCAT Indore for imaging structural defects in single crystals

Sunil Verma*, S. K. Sharma, K.S. Bartwal and P.K. Gupta

Laser Materials Development Devices and Division,
Raja Ramanna Centre for Advanced Technology, Indore-452 013, Madhya Pradesh

Structural defects in single crystals, particularly the type of defects, their spatial distribution, and the history of generation and propagation during growth, has strong linkage with the quality of the grown crystal and their influence on the physical properties. In order to image defects in the single crystals, an X-ray topographic imaging facility has been established at the Raja Ramanna Centre for Advanced Technology, Indore. The photograph of the system is shown in Fig.1 and a few representative topographs are shown in Figs.2 to 4.

Fig 1. *X-ray topography system for defects characterization of single crystals at RRCAT, Indore*

Dr. Sunil Verma,
Scientific Officer-F,
Laser Materials Development Devices and Division, RRCAT,
Indore-452 013, Madhya Pradesh,
Email: sverma1118@gmail.com

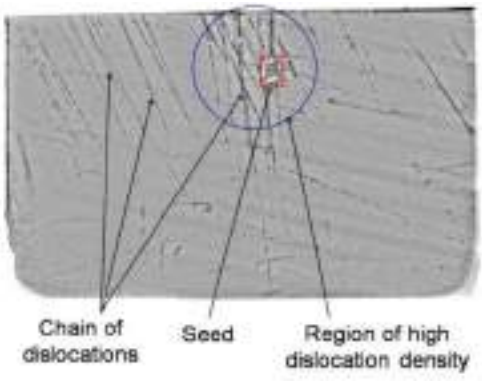


Fig 2*. X-ray topograph of (316) planes in (001) oriented plate of KDP crystal.*

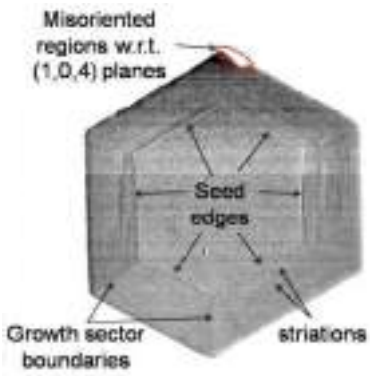


Fig 3. *Topograph of (104) planes in [001] oriented plate of $LiIO_3$ crystal*

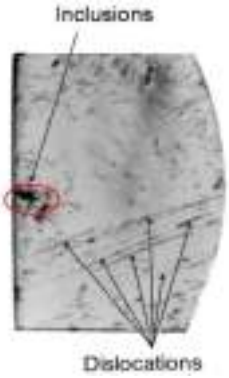


Fig 4. *Topograph of (100) planes in [100] oriented plate of $Li_2B_4O_7$ crystal*

Reference:
Sunil Verma*, S.K. Sharma, K.S. Bartwal**, RRCAT Newsletter**, Volume. 26, Issue 2, 2013, Page.26.

CRYSTAL GROWTH PROJECTS

Dr. G. Anandha Babu, Assistant Professor, Department of Physics, SSN College of Engineering, Chennai-603 110, Tamilnadu

Project Title : Investigation on Crystal growth and characterization of Multiferroic single crystal

Funding Agency: UGC-DAE CSR **Year :** 2014-2017 **Amount :** Rs. 7.00 lakhs

Dr. J. Angel Mary Greena, Professor, Department of Chemistry, PSN Engineering College, Melathediyoor, Tirunelveli-627 152, Tamilnadu

Project Title : Radiation effects on the physico-chemical properties of strontium formate dihydrate crystals

Funding Agency : BRNS **Year :** 2013-2016 **Amount :** Rs. 18,17,250

Dr. S. Brahadeeswaran, Professor and Head, Department of Physics, BIT-Campus, Anna University, Trichy-620 024, Tamilnadu

Project Title : Growth of DAST and BNA Single Crystals for Terahertz Applications

Funding Agency : DST-SERB **Year :** 2011-2014 **Amount :** Rs. 29,79,024

Dr. R. Ezhil Vizhi, Associate Professor and Division Chair, Crystal Growth and Crystallographic Section, VIT University, Vellore-632 014

Project Title : Investigations on the growth aspects of alkali (I-A) mixed boro succinates and Malonates single crystal

Funding Agency : DST-SERB **Year :** 2013-2016 **Amount :** Rs. 16.44 lakhs

Dr. S. Kalainathan, Deupty Director, Centre for Crystal Growth, VIT University, Vellore-632 014, Tamilnadu

Project Title : Growth and characterization of PMN-PT single crystal

Funding Agency : DRDO-NRB **Year :** 2013-2015 **Amount :** Rs. 32.41 lakhs

Dr. R. Mohan Kumar, Associate Professor, Department of Physics, Presidency College, Chennai-600 005, Tamilnadu

Project Title : Development of 4-N,N-dimethylamino-4'-N'-methylstilbazolium p-aminobenzene sulfonate (DSAS) crystals for electro-optic Applications

Funding Agency : CSIR **Year :** 2011-2014 **Amount :** Rs. 14,47,000

Dr. P. Murugakoothan, Associate Professor, Department of Physics, Pachaiyappa's College, Chennai-600 030, Tamilnadu

Project Title : Indigenous optical cell fabrication from Guanidinium based organic crystals for nonlinear optical application

Funding Agency : DST-SERB **Year :** 2013-2016 **Amount :** Rs. 29,84,800

Dr. Muthu Senthil Pandian, Research Scientist, SSN Research Centre, SSN College of Engineering, Chennai-603 110, Tamilnadu

Project Title : Unidirectional and bulk growth of high quality nonlinear optical (NLO) 2-amino-5-nitropyridinium (2A5NP) derivative single crystals for Second Harmonic Generation (SHG) device applications

Funding Agency : DST-SERB
Year : 2013-2017 **Amount :** Rs. 16,60,800

Dr. D. Prem Anand Devarajan, Assistant Professor, Department of Physics, St. Xavier's College, Palayamkottai-627 002, Tamilnadu

Project Title : Studies on swift heavy ion irradiated 2-Amino 5-Nitro Pyridine nonlinear optical (NLO) crystal adducts for laser generation

Funding Agency : BRNS **Year :** 2013-2016 **Amount :** Rs. 15,06,350

PI: Dr. M. Rathnakumari, Professor and Head, Department of Physics, Velammal Engineering College, Ambattur-Red Hills Road, Chennai - 600 066 ,Tamilnadu

Co-PI: Dr. P. Suresh Kumar, Professor of Physics and Dean-Research, Basic Sciences, Velammal Engineering College, Chennai-600 066

Project Title : Investigation on Growth and Characterization of a Novel Organic nonlinear Optical Crystal Bis 4-dimethylamino-N-Methyl 4-Stilbazolium terephthanate (BADS-TP) suitable for terahertz wave generation

Funding Agency : DRDO **Year :** 2012-2015 **Amount :** Rs. 14.93 lakhs

Dr. P. Suresh Kumar, Professor of Physics and Dean-Research, Basic Sciences, Velammal Engineering College, Chennai-600 066

Project Title : Growth of novel high NLO efficient Bismuth Borate (BIBO) crystals and their optical characterization

Funding Agency : DST **Year :** 2014-2017 **Amount :** Rs. 27 lakhs

Project Title : Growth of Novel nonlinear crystal $BaAlBO_3F_2$ for high power UV light generation

Funding Agency : CSIR **Year :** 2012-2015 **Amount :** Rs. 12 lakhs

CONFERENCE HIGHLIGHTS

XVII National Seminar on Crystal Growth (XVII-NSCG-2013)
January 9-11, 2013, (Sponsored by IACG, DST, CSIR, BRNS)

Department of Physics, Anna University, Chennai-600 025, Tamilnadu.

XVII National Seminar on Crystal Growth (XVII NSCG-2013), conducted in Association with Indian Association for Crystal Growth, was organized by the Department of Physics, Anna University, Chennai-25 in association with Indian Association of Crystal Growth during 9-11, January 2013. The convener, **Dr. R. Gopalakrishnan**, Associate Professor and Dr. D. Arivuoli, Professor and Head, Anna University and their team members of the Department of Physics successfully organized the XVII-NSCG. As the crystal growth is an interdisciplinary subject of research, it was conducted with the aim of making this seminar as a common platform for the Researcher Scholars and the students working in different areas of research to meet and discuss on the recent trends in the various advanced fields of research.

NSCG-XVII attracted a large number of research scholars and received two hundred and eight (208) national and two (02) International contributions. The participants of the seminar witnessed the presentation on crystal growth and fabrication of devices for various applications. Thus the seminar became the source for learning and enriching the knowledge of the participants in the field of crystal growth and related areas. In this seminar participants presented research papers in the growth of piezoelectric, dielectric, ferroelectric, acoustoptic and nonlinear optical crystals. Many papers reported the growth of crystals employing the novel Sankaranarayanan-Ramasamy (SR) unidirectional growth technique. Crystals grown from SR method are larger in size and acquired relatively improved quality, an inherent nature of the growth process of SR method. Further growth of a variety of organic, inorganic and semi-organic and pure and doped single crystals was reported in this seminar. Nucleation and growth kinetics, the fundamental aspects of crystal growth process, deposition of thin films for solar cell and hybrid solar cell applications were discussed. In addition synthesis of nanocrystalline materials from various route formed the subject matter of many presentations and discussion.

Experimental techniques on solution growth technique, float zone technique, Bridgeman method, Czochralski method and conventional and unidirectional solution growth methods were employed to grow a wide variety of crystals exhibiting a wide range of properties. Presentation of polymorphism on paracetamol and the effect of additives on the nucleation control and separation of polymorphs were attracted the attention of participants. In addition to the above variety of crystal growth methods, the gel technique, a versatile method when other methods are not applicable for growing certain crystals, was explained to grow and characterize cholesterol and hippuric acid single crystals. Presentation on the organic light emitting diodes with novel electron injection layers attracted the interest of the participants. Presentation on the pre-irradiation studies was discussed. Z-scan studies employed to derive the intensity dependent nonlinear susceptibilities of a few crystals were presented. Three dimensional X-ray crystal structures elucidated for some of the novel single crystal were presented and their structure related nonlinear optical (NLO) properties were explained.

Thus, the scientist and researchers from various national laboratories, universities and research centers of our country foreign country were participated in the above seminar and discussed on the growth of single crystals from various techniques. Further, deposition of thin films, nanostructured materials from various techniques and revealing their properties from various experimental techniques were presented. The students participated from various education and research institutes interacted with the experts working in the areas of crystal growth, thin films and material science and enriched their knowledge in these areas. The seminar as a whole motivated and guided the participants to carry out their research in their respective fields and to produce many novel results. Thus the XVII-NSCG successfully ended by fulfilling the aim for which the seminar was organized.

Dr. K. Ramamurthi
Professor, Department of Physics & Nanotechnology, Faculty of Engineering & Technology
SRM University, Kattankulathur-603 203, Tamilnadu

CONFERENCE HIGHLIGHTS

UGC Sponsored National Seminar on Recent Trends in Crystal Growth and Nano Materials, March 13-15, 2013

PG and Department of Physics, National College, Trichy-620 001, Tamilnadu.

National seminar on **'Recent Trends in Crystal Growth and Nanomaterials'** was held during March 13-15th, 2013 at Department of Physics, National College, Trichy. **Dr. P. Ramasamy**, President, Indian Association for Crystal Growth (IACG) and Dean (Research), SSN College of Engineering, Chennai, inaugurated the Two Days National Seminar on "Recent Trends in Crystal Growth and Nanomaterials (NSCGNM-2013) organized by the Department of Physics, National College, Trichy and released the Proceedings on 13-03-2013. **Dr. R. Jayavel**, Director, Centre for Nanoscience and Technology, Anna University, Chennai, presented keynote address. 28 Invited lectures and 112 contributed papers presented by the researchers from various research institutions, state and central universities and colleges. 180 delegates from 50 institutions participated in this seminar. In the invited lectures the broad topics like Crystal Growth, thin films and nanomaterials were discussed. Topics like hybrid systems for solar cell applications, advances in NLO materials, role of nano pure materials in Aerospace and defence electronics applications, nanomaterials for optical devices, nano crystalline composites, Recent developments in solar cells, X-ray crystal structure determination, Detection of Terahertz waves for biological and technological applications, Semi-organic single crystals for NLO applications, Preparation of nanomaterials by different methods and light propagation through 1D Photonic crystal were discussed.

Young researchers were presented their research work in Oral and poster presentation session. The topics discussed by the young researchers were Crystal Growth of NLO single crystals, Preparation of Semiconducting thin films and Preparation of nanoparticles and powders. Dr.A.T.Ravichandran, Co-convenor and **Dr. S. Pari**, Convenor of the NSCGNM-2013, gave the summary of the three days Seminar and proposed a vote of thanks. The final session was dedicated for panel discussion. **Dr.S.Pari** had made very elaborate arrangements and ensured great success for the programme.

Prizes were distributed to young researchers who excelled in Oral and Poster presentation.

Dr. Muthu Senthil Pandian, Photovoltaic Devices Lab, SSN Research Centre, SSNCE, Chennai
Dr. Usha Kannan, S.T. Hindu College, Nagercoil, **Mr. K. Karthick**, Bishop Heber College, Trichy and
Mrs. G. Pragadeeswari, National College, Trichy won the First Prize in Oral Presentation and
Mr. N. Sudhan, Alagappa University and **Mr. G. Thirupathy**, Annamalai University won the 1st Prize in Poster presentation.

Dr. R. Ramesh Babu
Assistant Professor, Crystal Growth and Thin Film Laboratory
Department of Physics, Bharathidasan University, Thiruchirappalli-620 024, Tamilnadu

CONFERENCE HIGHLIGHTS

National Conference on Recent Trends in Advanced Materials
December 16-17, 2013, (Sponsored by CSIR)

GRD Centre for Materials Research, PSG College of Technology
Coimbatore-641 004, Tamilnadu.

The organizing committee included **Dr. R. Amuda** (Chairperson), **Dr. R. Arun Kumar** (Convenor), Ms. A. Brinda (Co-Convenor), Ms. D. Cherine and Mr. A. Kumaresh (Organizing Secretaries). The main objectives of the conference was to provide a clear understanding of the fundamental concepts involved in materials, and the ability to nurture and tailor the properties of materials for technological applications that are gaining importance world-wide. Indian researchers have risen to this need in developing materials for various applications including optical, thermal, mechanical and energy-related applications.

With the above stated objectives, the 'National Conference on Recent Trends in Advanced Materials (NCRTAM 2013)' provided a common platform for scientists, academicians and young research scholars and post-graduate students working in the fields of Basic and Applied sciences – Physics, Chemistry, Materials Science and other relevant areas. The program encompassed various invited presentations from eminent speakers across the country and oral presentations. In order to motivate the scientific temper among young researchers, 'Young Researcher Presentations' were conducted and awards were given to best research presentations. Scientists/academicians across the country had participated and delivered lectures during the Conference.

Dr. Muthu Senthil Pandian, Research Scientist, Photovoltaic Devices Lab, SSN Research Centre, SSN College of Engineering, Chennai was selected and awarded with the '***Young Researcher Award***" for his efforts and Outstanding Contributions in the field of Crystal Growth.

The following papers were selected for the top three best presentations

I- Prize - **Mr. M. Prabaharan,** Hindustan Institute of Technology and Science, Chennai
II-Prize - **Ms. M. Sneha,** PSG College of Technology, Coimbatore
III-Prize - **Mr. M. Sukumar,** Department of Physics, Bharathidasan University, Tiruchirappalli

Council for Scientific and Industrial Research (CSIR) and Tamil Nadu State Council for Science and Technology (TNSCST) had supported the programme by providing financial assistance to organize the event.

Dr. G. Ravi
Professor, Department of Physics
Alagappa University, Karaikudi-630 003, Tamilnadu

CONFERENCE HIGHLIGHTS

UGC Sponsored National Conference on Advanced Materials, February 15-16, 2013
in collaboration with Indian Association for Crystal Growth
Department of Physics, St. Mary's College, Thoothukudi-628 001, Tamilnadu.

National conference on **'ADVANCED MATERIALS'** was held during 15-16th February 2013 at Department of Physics, St. Mary's College (Autonomous), Thoothukudi, Tamilnadu. This conference was organized by **Dr. Sr. Jessie Fernando.** Inaugural address was delivered by **Prof. P. Ramasamy**, President, IACG. **Mrs. Euchrista Immaculate Sylvia**, HOD, Department of Physics, St. Mary's College (Autonomous) gave the welcome address. The nicely arranged inaugural function was concluded with vote of thanks by **Dr. N. Theresita Shanthi,** Assistant Professor, Department of Physics, St. Mary's College (Autonomous). There were 14 invited talks and 62 contributed papers. More than 175 participants from all over India participated and presented papers in this conference. The conference covered various aspects of crystal growth and also focused on the synthesis and characterization to a great extent.

There was a panel discussion and many participants took active part in the deliberations. Dr.Jessie Fernando had made very elaborate arrangements and ensured great success for the programme. The college authorities and the faculty members were deeply involving in a variety of ways. The following papers were selected for best paper award.

1. Growth and characterization of Lithium Selenoindate single crystals
   P. Vijayakumar, A. Arunkumar, M. Magesh, G. Anandha babu, P. Ramasamy*
2. Optical Studies on Ammonium Oxalate Monohydrate Single Crystals
   S. Karuppusamy, P. Nagapandiselvi, M. Kamalanathan and R. Gopalakrishnan*
3. Synthesis, growth and characterization of Bis-thiourea sodium nitrate single crystals in the presence of sodium fluoride
   G.V.Anuradha, J. Benet Charles*
4. Structural, Optical and Electrical studies on Glycine added Ammonium Dihydrogen Phosphate Single Crystals
   T. Josephine Rani, Fernando Loretta, S. Ramalingom*, S. Perumal

The final session was dedicated for panel discussion. **Dr. Jessie Fernando's** hard work was responsible for the great success of the conference.

Mr. A. Arunkumar
Research Scholar, Centre for Crystal Growth
SSN College of Engineering, Chennai-603 110, Tamilnadu

FORTH-COMING EVENTS IN 2014

- **6th International Workshop on Crystal Growth Technology (IWCGT-2014)**
  Berlin, Germany, June 15-19, 2014.
  Web: http://iwcgt-6.ikz-berlin.de//

- **The 9th Annual Conference of the Thai Physics Society (SPC2014)**
  Rajamangala University of Technology, Thailand, March 26-29, 2014.
  Web: http://www.spc2014.org/

- **International Conference on Materials and Characterization Techniques (ICMCT-2014)**
  VIT University, Vellore-600 048, March 10-12, 2014.
  Web: http://www.vit.ac.in/ICMCT2014/Index.asp

- **Third National Seminar on Technologically Important Crystalline and Amorphous Solids**
  Department of Physics, Kalasalingam University, Krishnankoil, Feb 28-March 1, 2014.
  Web: http://www.kalasalingam.ac.in/p

- **Second National conference on Physics and Chemistry of Solids (NCPCS-2014)**
  SR& BGNR Govt. Arts & Science College, Andra Pradesh, March 29-30, 2014.
  Web: http://www.ncpcs2013.350.com/

- **International Symposium on Innovations in Materials Science and Technology**
  Department of Materials Science, Sardar Patel University, Gujarat, March 14-15, 2014.
  Web: http://www.spuvvn.edu/

- **5th International Conference on Perspectives in Vibrational Spectroscopy (ICOPVS-14)**
  Mascot Hotel, Trivandrum, Kerala, July 8-12, 2014.
  Web: www.icopvs.org

- **12th International Conference on Fundamental & Applied Aspects of Physical Chemistry**
  University of Belgrade, Serbia, September 22-26, 2014.
  Web: http://www.socphyschemserb.org/en/events/pc2014/

- **Second National Conference on Photonics and Materials Science (II NCPMS-2014)**
  Guru Jambheshwar University of Science & Technology, Haryana, March 20-21, 2014.
  Web: http://www.gjust.ac.in/

- **Modern Physical Chemistry for Advanced Materials (MPCAM)**
  V. N. Karazin Kharkiv National University, Ukraine, June 26-30, 2014
  Web: http://www-chemo.univer.kharkov.ua/beketov2014/index.php

- **17th International Symposium on Silicon Chemistry jointly with the 7th Euopean Silicon Days**
  Berlin, Germany, August 3-8, 2014
  Web: http://www.isos2014.de/

- **International Conference on Advanced Materials for Demanding Applications (ICAMDA)**
  Glyndwr University, St Asaph, UK, April 7-10, 2014
  Web: http://amda2014.iopconfs.org/home

SOME OF THE CRYSTAL GROWTH RESEARCH GROUPS

Prof. S. Jerome Das, Dean of Science and his Ph.D. students in Department of Physics, Loyola College, Chennai

Prof. K. G. Rewatkar, Professor and Head and Crystal Growth researchers in Department of Physics, Dr. Ambedkar College, Nagpur

Dr. R. Gopalakrishnan, Associate Professor and his Ph.D. Students in Crystal Research Laboratory, Department of Physics, Anna University, Chennai

Prof. S. Kalainathan, Deputy Director and his Crystal Growth Research Students in Centre for Crystal Growth, VIT University, Vellore

Prof. P. Murgakoothan, MRDL, PG & Research Department of Physics, Pachaiyappa's College, Chennai and his Ph.D. students

Dr. R. Arun Kumar, Assistant Professor and Centre in Charge, and his students in GRD Centre for Materials Research, PSG College of Technology, Coimbatore

LIST OF JOURNALS WITH IMPACT FACTOR - FEBRUARY-2014

Journal Name	IF
Advanced Functional Materials	**9.765**
Advanced Optical Materials	**10.88**
Applied Surface Science	**2.112**
Applied Physics A : Materials Science and Processing	**1.545**
Bulletin of Materials Science	**0.584**
Chinese Science Bulletin	**1.319**
Crystal Growth and Design	**4.68**
Crystal Engineering Communication	**3.879**
Crystal Research and Technology	**1.12**
Current Applied Physics	**1.814**
Ferroelectrics	**0.415**
Japanese Journal of Applied Physics	**1.067**
Journal of Crystal Growth	**1.552**
Journal of Applied Crystallography	**3.343**
Journal of Alloys and Compounds	**2.390**
Journal of Physics and Chemistry of Solids	**1.527**
Journal of Physics D: Applied Physics	**2.528**
Journal of Solid State Chemistry	**2.040**
Journal of Physics: Condensed Matter	**2.355**
Journal of Materials Chemistry	**6.101**
Journal of Materials Science and Technology	**1.198**
Journal of Materials Science: Materials in Electronics	**1.486**

Journal Name	IF
Journal of Thermal Analysis and Calorimetry	**1.982**
Materials Letters	**2.224**
Materials Chemistry and Physics	**2.072**
Materials Research and Bulletin	**2.141**
Materials Science and Engineering A	**2.108**
Materials Science and Engineering B	**1.846**
Materials Characterizations	**1.880**
New Journal of Chemistry	**2.966**
Optical Materials	**1.918**
Optics Communications	**1.438**
Optics and Laser Technology	**1.365**
Optik- International Journal for Light and Electron Optics	**0.524**
Progress in Crystal Growth and Characterization of Materials	**1.600**
Physica B:Condensed Matter	**1.327**
Science of Advanced Materials	**2.509**
Solid State Communications	**1.534**
Solid State Science	**1.671**
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy	**1.977**
Surface Science Letters	**1.838**
Synthetic Metals	**2.109**
Nuclear Instruments and Methods in Physics Research Section: B	**1.266**
The European Physical Journal of Applied Physics	**0.710**

FELLOWSHIPS AVAILABLE IN INDIA

DAE - Dr. K. S. Krishnan Research Associateship (KSKRA)
Stipend: Rs.26000 per month + Benefits **Web:** http://www.barc.ernet.in/

UGC – Dr. S. Kothari Post Doctoral Fellowship
Stipend: Rs.18000 p.m. to 22000 p.m. with annual increase of Rs.1000 **Web:** http://www.ugc.ac.in/

Jawaharlal Nehru Memorial fellowship (JNMF) **Stipend:** The fellowship is tenable for two years and carries a monthly stipend of Rs.10000/-. **Web:** http://www.jnmf.in/fabout.html

Prime Minister's Fellowship Scheme for Doctoral Research **Stipend:** Rs.6 Lakh per annum for a maximum period of four years. **Web:** http://www.dst.gov.in/whats_new/whats_new12/pm-fellowship.pdf

UGC - Rajiv Gandhi National Fellowship (RGNF) for SC/ST candidates
Stipend: Rs.12000 p.m. for initial 2 years. Rs.14000 p.m. for remaining tenure. **Web:** http://www.ugc.ac.in/

CSIR-Nehru Science Post Doctoral Research Fellowship
Stipend: Rs.35000 per month and Rs.3.0 lakh contingency per annum. **Web:** www.csirhrdg.res.in

DST - Ramanujan Fellowships **Stipend:** Rs.75000 per month and Rs.5.00 lakh contingency per annum.
Web: http://www.dst.gov.in/scientific-programme/nsti/ramanujan fellowship.pdf

DST – JC Bose National Fellowships **Stipend:** Rs.20000 per month in addition to regular income.
Web: http://www.dst.gov.in/scientific-programme/nsti/jc bose fellowship.pdf

SERC – Swarnajayanti Fellowships
Stipend: Rs.25000 per month in addition to regular income. **Web:** http://www.serc-dst.org/swarnjayanti.htm

UGC-Post Doctoral Fellowship for Women Candidates **Stipend:** Rs.18000 pm for first 2 years and Rs.20000 pm for next 2 years and Rs.50000 p.a. for contingency. **Web:** http://www.ugc.ac.in/

CSIR-Senior Research Fellowship **Stipend:** Rs.18,000 per month for initial 3 years and Rs.20,000 contingency per annum. **Web:** www.csirhrdg.res.in

Maulana Azad National Fellowship for Minority Students **Stipend:** Rs.16000 pm for 2 years and Rs.18000 pm for remaining two years and Rs.25000 contingency. **Web:** http://www.ugc.ac.in/

Raman Charpak Fellowship Consolidated Fellowship of Euros 1300 per month including accommodation charges plus Social Security charges to be paid in France for the Indian students through Campus France.
Web: http://www.inde.campusfrance.org/en/news/charpak-scholarship-awardees-20132014

National Solar Science Fellowship Programme Each selected Fellow will receive a total annual grant of upto 32.00 lakhs comprising emolument of up to 12 lakhs (ii) contingencies of upto 5 lakhs and (iii) research grant of upto 15.00 lakhs **Web:** www.mnre.gov.in

DST-Empowerment and Equity Opportunities for Excellence in Science for SC/ST candidates
Web: http://www.serb.gov.in/home.php

UGC-Post Doctoral Fellowship for SC/ST candidates
Stipend: Rs.25000 per month (first 2 years) and Rs.30000 per month (next 3 years) **Web:** http://www.ugc.ac.in/

DST-Jawaharlal Nehru Science Fellowship **Stipend:** US$100,000 for 12 months and offers flexibility to avail it over a total period of three years in any part duration/year. **Web:** www.dst.gov.in

DST-Bhaskara Advanced Solar Energy Fellowship programme **Stipend:** Minimum 3 months and upto 12 months.
Web: http://indousstf.org/base-program/index.html

PAST CONFERENCES/SEMINARS/WORKSHOPS

The organizer handing over the Memento to **Prof.D.B.Gadkari** in UGC Sponsored National Conference on Advanced Materials, St. Mary's College, February 15-16, 2013

Department of Physics Faculties, The American College, Madurai with **Prof.Louis J. Farrugia**, University of Glasgow, UK in One Day Lecture on Charge Density at Madurai

Inauguration of National Seminar on Recent Trends in Materials Science, Department of Physics, M.Kumarasamy College of Engineering, Karur organized by **Dr. L. Guruprasad**

Inauguration of NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013 organized by **Dr. S. Pari**

Prof.C.K.Mahadevan handing over the Memento to **Prof.G.Ravi** in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

Crystal Growth researchers in Fourth International Conference on Perspective in Vibrational Spectroscopy held at Bishop Moore College, Mavelikara, Kerala during 6-9th August 2013

Dr.R.Gopalakrishnan handing over the Memento to **Prof.P.Ramasamy** in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

Prof.P.Ramasamy & his students with **Dr.Suja Elizabeth**, IISc, Bangalore in 58th Solid State Physics Symposium in Thapar University, Punjab on 17-21, December 2013

The release of the Abstract CD in National Conference on Recent Trends in Advanced Materials, GRD Centre for Materials Research, PSG College of Tech, Coimbatore during 16-17, December 2013 organized by **Dr. R. Arun Kumar**

Abstract released on the occasion of National Seminar on Recent Trends in Materials Science held at Cauvery College, Trichy on 23rd January 2013

Prof.S.Moorthy Babu handing over the Memento to **Prof.C.K.Mahadevan** in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

Dr.V.N.Mani handing over the Memento to **Dr.R.Ramesh Babu** In NCRTAM-2013 at PSG College of Technology, Coimbatore on November 16-17, 2013

Inauguration of National Seminar on Recent Trends in Crystal Growth and Nanomaterials at The National College, Trichy-01 on March 13-15, 2013

Dr.S.Mannivannan handing over the Memento to **Prof.P.Ramasamy** in the NCAMA-2013 held at NIT, Trichy, 5-6, April 2013

Participants from National Conference on Hierarchically Structured Materials, 24-25, January 2013 at Department of Physics, SRM University, Chennai

The release of the Abstract book in National Seminar on Recent Trends in Crystal Growth and Nanomaterials at The National College, Trichy-01 on March 13-15, 2013

Prof.P.Ramasamy interacting with **Prof.R.Dhanasekaran** in National Conference on Recent Trends in Advanced Materials, PSG College of Technology, Coimbatore during 16-17, December 2013 organized by **Dr. R. Arun Kumar**

Young Researcher Awardees with the Organizing Committee in the National Conference on Advanced Materials and Applications held at NIT, Trichy during 5-6, April 2013

Prof.Mihir Joshi with **Prof.K.N.Iyer**
in the inauguration of
National Workshop on Functional Oxide Materials
in Saurashtra University, Rajkot, Gujarat.

Dr. M. Venkatachalam, Professor in Electronics, Erode Arts and Science College, honoring **Prof. P.Ramasamy** with a memento during NCRTAM 2013, PSG College of Technology , Coimbatore, 16-17, December 2013

Inauguration of State Level Conference on Emerging Trends in Materials Synthesis and Characterization,
The National College, Trichy
during January 19-20, 2013

The release of the Abstract Book in UGC Sponsored National Conference on Advanced Materials,
Department of Physics, St. Mary's College, Thoothukudi,
February 15-16, 2013

The Organizer handing over the Memento to
Dr.R.Ramesh Babu in NSRTCGN-2013 at
The National College, Trichy-01
on March 13-15, 2013

Dr.R.Gopalakrishnan handing over the Memento to
Dr.R.Jayavel in NSRTCGN-2013 at
The National College, Trichy-01
on March 13-15, 2013

Prof. P. Ramasamy and his students with **Dr. Aravazhi** in 17th International Conference on Crystal Growth and Epitaxy was held at Warsaw, Poland, August 11-16, 2013

The release of Abstract Book in III National Conference on Advanced Materials on 23-25, January 2013 held at PSN College of Engineering and Technology, Tirunelveli

The Organizer handing over the Memento to **Prof.P.Murugakoothan** in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

Dr.R.Rudramoorthy, Principal, PSG College of Technology, Coimbatore inaugurating GRD Centre for Materials Research on 20th June 2013

III National Conference on Advanced Materials on 23-25, January 2013 held at PSN College of Engineering and Technology, Tirunelveli

The release of the Abstract CD in Second National Seminar on New Materials Research and Nanotechnology at Government Arts College, Ooty on September 25-27, 2013

Dr.P.Selvarajan handing over the Memento to the Invited Speaker in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

Dr. R. Rudramoorthy, Principal, PSG College of Technology, holding discussions with the resource persons of NCRTAM 2013 on 16 December 2013

Resource Persons in XVII National Seminar on Crystal Growth at Anna University, Chennai on 9-11 January 2013

Prof. R. Dhanasekaran handing over the Memento to **Prof. S. Kalainathan** in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

The organizer handing over the Memento to **Dr.M.Arivanandhan** in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

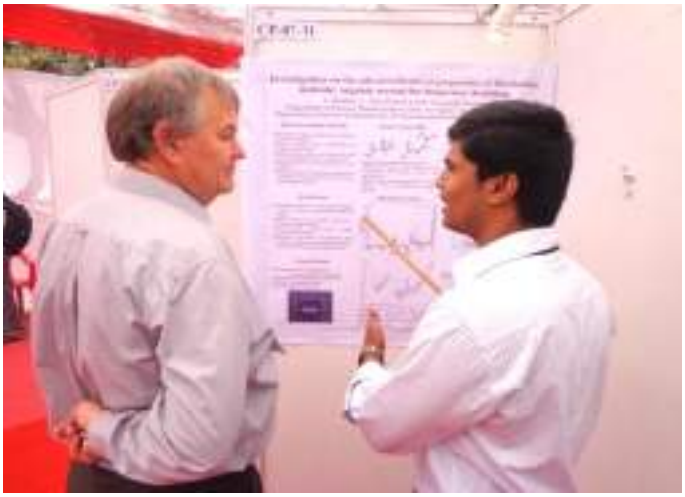
Crystal Growth Researchers from University of Delhi with **Prof.P.Ramasamy** in XVII National Seminar on Crystal Growth at Anna University, Chennai on 9-11 January 2013

CRYSTAL GROWTH PAPERS IN NLS-21

21st DAE – BRNS National Laser Symposium (NLS 21), February 6-9, 2013

Bhaba Atomic Research Centre (BARC), Trombay, Mumbai -400 085

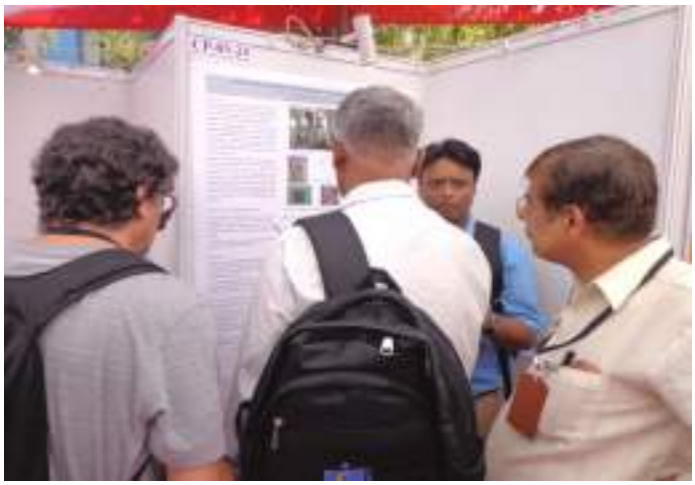
Dr. Sunil Verma, RRCAT and **Dr. Muthu Senthil Pandian**, SSN RC presenting paper in Optical imaging of Convection in SR method



Dr. L. Guruprasad, Assistant Professor, M. Kumarasamy College of Engineering, Karur, Tamilnadu

P. Nagapandi Selvi, Research Scholar, Crystal Research Lab, Department of Physics, Anna University, Chennai

Mr. K. Boopathi, SSN CE, **Dr. S. K. Sharma**, RRCAT and **Dr.K.Ramachandra Rao**, Govt. Arts College, Rajahmundry



Dr.Indranil Bhaumik, Scientific Officer-F, Laser Materials Development Devices and Division, RRCAT, Indore

Crystal Growth Researchers with **Dr. Sunil Verma**, Scientific Officer-F, LMDDD, RRCAT, Indore at NLS-21, BARC, Mumbai

Inauguration of
XVII National Seminar on Crystal Growth
held at Anna University, Chennai
during 9-11, January 2013

Prof. K. Sankaranarayanan, Alagappa University
giving Invited Lecture in NSRTCGN-2013 at
The National College, Trichy-01 on
March 13-15, 2013

The release of Conference Proceedings in International
Conference on Recent Advances in Physics, PG & Research
Department of Physics, Sri Vidya Mandy Arts & Science
College, Uthangarai, 12-13, August 2013

Prof.Hideki Abe, NIMS, Japan**, Prof.G.Attolini,** Italy and
Prof.S.M.Rao, Taiwan in XVII National Seminar on Crystal
Growth held at Anna University, Chennai
during 9-11, January 2013

Prof. P. Murugakoothan, Dr. R. Ramesh Babu,
Prof.K.Ramamurthi, Dr. S. Ganesamoorthy and
Dr.R.Gopalakrishnan in XVII NSCG held at Anna University,
9-11, January 2013 during Poster Session

Dr.R.Arun Kumar handing over the Memento to
Dr.J.Ravichandran in National Conference on Recent Trends in
Advanced Materials, PSG College of Technology, Coimbatore
during 16-17, December 2013

INDIAN ASSOCIATION FOR CRYSTAL GROWTH

Centre for Crystal Growth, SSN College of Engineering, Chennai 603 110

IACG "PROF.P.RAMASAMY NATIONAL AWARD FOR CRYSTAL GROWTH"

Norms for the Award

1. Any Indian Scientist who has contributed to the field of crystal growth is eligible for the award.
2. Any foreign scientist who has contributed to the development of crystal growth activities in India is eligible for the award.
3. Individual or Institution/Laboratory can be considered for the award.
4. Preference will be given to the crystal growth research carried out in India.
5. The research works carried out in the preceding five years of the year of award to be considered primarily for the award.
6. There is no age limit.
7. Self nomination/Nomination by the member of IACG/Nomination by an Institution can be accepted.
8. Scientist/Institution awarded once will be eligible for this award again only after five years from the date of previous award.
9. Award will be given once in two years, initially. Any more donation from any donor under same title is to be additive to the sum already donated and the award can be given annually.
10. The President, IACG may take the advice of the committee constituted by him for the purpose of selecting suitable awardee (s) and the decision of the President will be final.

HONORS/AWARDS

Dr.R.Gopalakrishnan handing over the Memento to **Prof.P.Ramasamy** in XVII National Seminar on Crystal Growth held at Anna University, Chennai, 9-11, January 2013

The Chairman, Sri Vidya Mandir Arts and Science College, Krishnagiri handing over the Memento to **Prof. S. Kalainathan** in International Conference on recent advances in Physics on 12-13 August 2013

Dr. Lucia Rose handing over the Memento to **Prof.P.Ramasamy** in UGC Sponsored National Conference on Advanced Materials, Department of Physics, St. Mary's College, Thoothukudi, February 15-16, 2013

Dr. R. Gopalakrishnan, Associate Professor, Crystal Research Lab, Department of Physics, Anna University, Chennai receiving the **Active Researcher Award-2013** from **Dr. M. Rajaram**, Vice Chancellor, Anna University, Chennai-25

The Principal, National College, Trichy handing over the Memento to **Prof.P.Ramasamy**, President-IACG in NSRTCGN-2013 at The National College, Trichy-01 on March 13-15, 2013

Dr.S.Sivanesan handing over the Memento to **Prof.P.Ramasamy**, President-IACG in XVII National Seminar on Crystal Growth at Anna University, Chennai on 9-11 January 2013

The release of IACG-News Letter-2013 in XVII National Seminar on Crystal Growth held at Department of Physics, Anna University, Chennai during January 9-11, 2013

Dr.S.C.Gadkari, Scientist & Head, Technical Physics Division, BARC, Mumbai receiving "IACG Prof.P.Ramasamy National Award for Crystal Growth" at XVII NSCG held at Anna University, Chennai during January 9-11, 2013

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