

## CV of Dr.S.Moorthy Babu

1. **Name** Dr.S.Moorthy Babu

**Address:** Professor  
Crystal Growth Centre  
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**Additional Duty:** Director  
(from 1.6.2020) Crystal Growth Centre  
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**Previous Additional Duty:**  
(12.6.2015 - 31.5.2020) Director  
Centre for Nanoscience and Technology  
Anna University  
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2. **Gender** Male
3. **Date of Birth** 2<sup>nd</sup> June, 1964
4. **E-mail ID** [smoorthybabu@gmail.com](mailto:smoorthybabu@gmail.com) ; [babu@annauniv.edu](mailto:babu@annauniv.edu)  
[babusm@yahoo.com](mailto:babusm@yahoo.com)
5. **Qualifications**

Degree/ Diploma	University	Year of Passing	Subject of Specialisation	Class/Grade
B.Sc.	Madras University	1984	Physics	First Class ( <b>College First</b> )
M.Sc.	Madras University	1986	Physics (Electronics)	First Class ( <b>GOLD MEDAL</b> )
M.Phil.	Anna University	1987	Chemical Physics	First Class
Ph.D	Anna University	1993	Crystal Growth: Growth, kinetics and Characterisation of Compound semiconductors	

## 6. Employment Experience

Positions held	Responsibilities	Period		Organisation Name & Address
		From	To	
Director, Crystal Growth Centre	Teaching, Research & Administration	1.06.2020	Till Date	Anna University, Chennai-600025
Director, Centre for Nanoscience and Technology	Teaching, Research & Administration	12.06.2015	31.05.2020	Anna University Chennai-600025
Professor	Teaching & Research	29.09. 2008	Till Date	Anna University, Chennai-25
Assistant Professor	Teaching & Research	29.09. 2000	28.9.2008	Anna University, Chennai-25
Lecturer (Sr. Grade)	Teaching & Research	26.9.1996	28.9.2000	Anna University, Chennai-25
Lecturer	Teaching & Research	26.9.1991	25.9.1996	Anna University, Chennai-25
<b>Alexander von Humboldt Fellow</b>	Research	2.7.2001	31.10.2002	Hahn Meitner Institute, Berlin, GERMANY
<b>STA FELLOW</b>	Research	4.3.1997	3.3.1999	NIMS, Tsukuba, JAPAN

## Awards and Honours:

### A. National :

#### First Rank in the University level during M.Sc.(1986)

- \* JAGIRDAR OF ARNI MEDAL I 1986
- \* PROF.P.E.SUBRAMANI AYYAR COMMEMORATION MEDAL 1986
- \* **DR.K.S.KRISHNAN GOLD MEDAL 1986**
- \* DR.K.S.KRISHNAN MEMORIAL PRIZE 1986
- \* **JAWAHARLAL NEHRU MEMORIAL AWARD 1986**

YOUNG PHYSICIST AWARD 1991 (INDIAN PHYSICAL SOCIETY)

IACG Prof.P.RAMASAMY AWARD, 2009

ACTIVE RESEARCHER AWARD, ANNA UNIVERSITY, INDIA, 2012

ACTIVE USER AWARD (LIBRARY), ANNA UNIVERSITY, INDIA, 2014

Leadership in Academic Programme (LEAP), IIT BHU, Varanasi, INDIA, 2019-20

## **B. International :**

YOUNG AUTHOR ATTRACTIVE PAPER, ICCG-9, 1989, JAPAN

**Science and Technology Agency (STA) FELLOWSHIP, JAPAN 1997-1999**

**ALEXANDER von HUMBOLDT (AvH) FELLOWSHIP, GERMANY, 2001-2002**

ERASMUS MUNDUS ACADEMIC EXCHANGE FELLOWSHIP, ITALY, 2010

VISITING PROFESSOR, SHIZUOKA UNIVERSITY, JAPAN, 2011

ERASMUS MUNDUS ACADEMIC EXCHANGE FELLOWSHIP, ITALY, 2013

Collaborative Exchange Fellowship, Shizuoka University, JAPAN, 2014

ERASMUS + ACADEMIC EXCHANGE, University of Edinburgh, U.K. 2018

Leadership in Academic Programme (LEAP), Cambridge University, U.K. 2020

Sakura Science Programme, JSPS, Shizuoka University, Japan, 2020.

### **Brief Details of Travel and Study Abroad including Post-doctoral visits**

Sl. No.	Place	Period	Purpose
1	ICCG-9, IMR, Tohoku, <b>Japan</b>	17.8.1989 to 28.8.1989	Participation in Conference
2	ICCG-10, SanDiego, <b>U.S.A.</b>	5.9.1992 to 16.9.1992	Participation in Conference
3	Convention Center, Anaheim and The Hague, <b>THE NETHERLANDS</b>	9.6.1995 to 16.6.1995	Participation in ISSCG-8 and ICCG-11
4	ICTP, Trieste <b>Italy</b>	18.9.1995 to 6.10.1995	Participation in Workshop
5	National Institute of Materials Science, <b>Japan</b>	4.3.1997 to 3.3.1999	<b>STA Fellowship, Post Doctoral Studies</b>
6	Hahn Meitner Institute, Berlin, <b>Germany</b>	02.07.2001 – 31.10.2002	<b>ALEXANDER von HUMBOLDT Fellowship</b>

7	International Summer School on Crystal Growth, Berlin, <b>Germany</b> ,	August, 1-7, 2004	Participation in Summer School
8	International Conference on Crystal Growth – 14, Grenoble, <b>France</b> ,	August, 9-14, 2004	Participation and presentation of papers in the Conference
9	Kick off Meeting EU-Asia Link Programme, Politecnico di Torino, <b>Italy</b>	29-30, November, 2004	Project Meeting (EU-Asia Programme)
10	<b>NIMS, Japan</b>	1-15, March, 2005	Short Training and Characterisation of Crystals
11	First Year Review Meeting EU-Asia Link Programme, Luoyang, <b>China</b>	19-23, September, 2005	Project Meeting (EU-Asia Programme)
12	Asian Conference on Crystal Growth and Crystal Technology, Beijing, <b>China</b>	October, 16-18, 2005	Participation and presentation of papers in the Conference
13	Young Teacher Training and workshop, EU-Asia Link Programme, Politecnico di Torino, <b>Italy</b>	14-24, November, 2006	Short Training and Workshop (EU-Asia Programme)
14	International Conference on Crystal Growth (ICCG-15), Salt Lake City, <b>USA</b> .	August, 12-17, 2007	Participation and presentation of papers in the Conference
15	Third Year Review Meeting EU-Asia Link Programme, Southampton University, <b>United Kingdom</b>	23-29, Feb, 2008	Project Meeting (EU-Asia Programme)
16	<b>BUET, Bangladesh</b>	14-17, May, 2009	Participation in Conference
17	University of Pisa, <b>Italy</b>	1.9.2009 to 7.9.2009	Participation in Conference ISLNOM-5
18	Politecnico di Torino, <b>Italy</b>	1.6.2010 to 31.7.2010	<b>Erasmus Mundus Academic Exchange Fellowship</b>
19	Shizuoka University, Hamamatsu, <b>Japan</b>	15.12.2010 to 14.2.2011	Indo-Japan Collaborative Programme
20	Shizuoka University, Hamamatsu, <b>Japan</b>	12.12.2011 to 21.12.2011	Indo-Japan Collaborative Programme
21	Shizuoka University, Hamamatsu, <b>Japan</b>	19.10.2012 to 29.10.2012	Indo-Japan Collaborative Programme
22	National Taiwan University, Taipei, <b>Taiwan</b>	11.11.2012 to 15.11.2012	International Conference on Renewable Energy
23	Shizuoka University, Hamamatsu, <b>Japan</b>	27.09.2013 to 7.10.2013	Indo-Japan Collaborative Programme
24	Politecnico di Torino, <b>Italy</b>	19.05.2014 to 15.06.2014	<b>Erasmus Mundus Academic Exchange Fellowship</b>
25	Shizuoka University, Hamamatsu, <b>Japan</b>	1.10.2014 to 31.12.2014	Indo-Japan Collaborative Programme Visit under MoU

26	Lake Biwa Hotel Otsu Prince Hotel, JAPAN	12.11.2017 to 17.11.2017	<b>PVSEC-27</b> , International Conference Participation and presentation of papers.
27	University of Edinburgh, U.K.	23.7.2018 to 27.7.2018	<b>ERASMUS + ACADEMIC EXCHANGE</b>
28	Cambridge University, UK	20.1.2020 to 26.1.2020	<b>Leadership in Academic Programme (LEAP)</b>
29	Shizuoka University, Japan	02.2.2020 to 10.2.2020	<b>Sakura Science Programme, Japan</b>

### **Ph.D Thesis Supervised / Completed**

S. No	Name of the Research Student	Year of Completion	Title of the thesis
1	Dr.N.Senguttuvan	1997	Some investigations on the growth of lead molybdate and lead tungstate single crystals and their charecterization.
2	Dr.A.M.Sembian	1999	Liquid phase epitaxy and characterization of thick related SiGe layers on Si(100) substrates and their applications to solar cells.
3	Dr.R.Kumaresan	2001	Novel 'Photochemical Deposition' and conventional 'Electrochemical Deposition' of CdS and Hg <sub>x</sub> Cd <sub>1-x</sub> Te semiconductor thin films and their characterization for solar cell applications
4	Dr.Premila Mohan	2001	Investigations on the bulk growth of InSb and InSbBi crystals by vertical Bridgman technique and their characterization.
5	Dr.M.Haris	2006	Growth of some III-V binary and ternary bulk crystals and effect of Sn ion implantation on InSb bulk substrates
6	Dr..P.Veeramani	2007	Investigation on growth and Characterization of CdTe and CdZnTe crystals and development of schottky barrier diode and high energy gamma ray detector.
7	Dr.P.Kumaresan	2008	Growth and characterization of KH <sub>2</sub> PO <sub>4</sub> (KDP) crystals doped with metal ion, dyes, amino acids and effect of swift heavy ion irradiation on doped KDP crystals.

8	Dr.(Ms).S.K.Geetha	2008	Effect of additives in nucleation kinetics and growth of potassium acid phthalate crystals (KAP) from solution and dielectric and Z-scan studies on grown crystals.
9.	Dr.A.Senthilkumaran	2008	Growth of Pure and Rare Earth (Nd <sup>3+</sup> and Yb <sup>3+</sup> ) doped Double Tungstates [KGd(WO <sub>4</sub> ) <sub>2</sub> ] and [KY(WO <sub>4</sub> ) <sub>2</sub> ] and their characterisation
10.	Dr.M.Abd el_Sadek	2009	Synthesis and Characterization of CdTe and CeTe-Related (Core-Shell) Nanocrystals
11.	Dr.R.Perumal	2009	Growth and Characterization of Allylthiourea based nonlinear optical and Glycine phosphite – Ferroelectric single crystals
12.	Dr.P.Kumar	2010	Growth of Lithium Niobate single crystals and Fabrication of nonlinear optical devices
13.	Dr.P.Samuel	2011	Investigation on rare earth ion doped solid state laser hosts: Single crystals and transparent ceramics
14.	Dr.V.Kathirvel	2011	Correlation between structural stability and electronic structure of f-electron based Intermetallic compounds under Pressure
15.	Dr.K.Senthilkumar	2011	Studies on Growth and Properties of Pure and doped (metals, rare earths, dyes and amino acid) Glycine Phosphite (GPI) Single Crystals
16.	Dr.D.Thangaraju	2012	Single Crystal Growth of Pr <sup>3+</sup> :KGd(WO <sub>4</sub> ) <sub>2</sub> and Nano powder Synthesis of KRE(WO <sub>4</sub> ) <sub>2</sub> (RE=La <sup>3+</sup> -Lu <sup>3+</sup> ) and their Characterization
17.	Dr.J.Ramkumar	2015	Solution Phase Synthesis of CuInSe <sub>2</sub> Nanoparticles and Their Characterization
18.	Dr.A.Durairajan	2015	Growth of K <sub>1-x</sub> Na <sub>x</sub> Gd(WO <sub>4</sub> ) <sub>2</sub> Crystals and Synthesis of Pure and Ln <sup>3+</sup> Doped NaGd(WO <sub>4</sub> ) <sub>2</sub> (Ln <sup>3+</sup> =Pr <sup>3+</sup> , Sm <sup>3+</sup> , Eu <sup>3+</sup> , Dy <sup>3+</sup> and Tm <sup>3+</sup> ) Phosphors
19.	Dr.D.Balaji	2015	Synthesis and Luminescence Properties of CsGd(WO <sub>4</sub> ) <sub>2</sub> :Re <sup>3+</sup> Phosphors
20.	Dr.S.Ananthakumar	2016	Investigation on Semiconductor Nanostructures (CdTe, CdSe, TiO <sub>2</sub> and Cu <sub>2</sub> ZnSnS <sub>4</sub> ) for Third Generation Photovoltaics

21.	Dr.K.Kavi Rasu	2017	Synthesis of $\text{Eu}^{3+}:\text{ALn}(\text{WO}_4)_2$ ( $\text{A}^+=\text{Li}^+, \text{K}^+ \& \text{Rb}^+$ ; $\text{Ln}^{3+}=\text{La}^{3+} \& \text{Gd}^{3+}$ ) and Evaluation of Luminescence properties for Red Phosphors
22.	Dr.M.Senthil Kumar	2019	Investigations on Inexpensive Copper Chalcogenide Nanoparticles for Efficiency Enhancement in Next Generation Solar Cells
23.	Dr.C.Imla Mary	2020	Study on Multifunctional Properties of Copper Zinc Tin Chalcogenide Nanoparticles for Photocatalytic and Photovoltaic Applications

## 7. List of Publications

(Only SCOPUS INDEXED journal publications with impact factor)

- Solution processed  $\text{Cu}_2\text{ZnSnSe}_4$  nanoink for inexpensive Pt-free counter electrode in dye-sensitized solar cells  
C.Imla Mary, M.Senthilkumar, G.Manobalaji and **S.Moorthy Babu**  
Solid State Sciences, 116 (2021) 10661
- Surface-treated  $\text{Cu}_2\text{ZnSnS}_4$  nanoflakes as Pt-free inexpensive and effective counter electrode in DSSC  
C.Imla Mary, M.Senthilkumar, G.Manobalaji and **S.Moorthy Babu**  
Journal of Materials Science: Materials in Electronics volume 31, (2020) 18164–18174
- Investigation on  $\text{Cu}_x\text{S}$  nanoparticles based hole transfer layer as an inexpensive alternative for next generation solar cells  
M. Senthilkumar, C. Imla Mary, G. Manobalaji and **S. Moorthy Babu**  
AIP Conference Proceedings 2265, 030610 (2020); <https://doi.org/10.1063/5.0023727>
- Role of Temperature and Growth Period in the Synthesis of Hydrothermally Grown  $\text{TiO}_2$  Nanorods  
S. Ananthakumar, P. Yilmaz, X. Li, Joe Briscoe, A. Anderson, Steve Dunn, **S. Moorthy Babu**  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
J. Nanosci. Nanotechnol. Vol. 20, (2020) Pages: 3873–3878
- Developments in Colloidal Synthesis of  $\text{Cu}_{2-x}\text{S}$  ( $0 \leq x \leq 1$ ) Nanocrystals—An Overview  
S. Ananthakumar, **S. Moorthy Babu**  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
J. Nanosci. Nanotechnol. Vol. 20, (2020) Pages: 3659–3682
- Synthesis and photoluminescence properties of  $\text{Sm}^{3+}$  doped  $\text{LiGd}(\text{WO}_4)_2$  phosphors with high color purity  
K. Kavi Rasu, **S Moorthy Babu**, K. Vijayarangamuthu  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
Optical Materials, Vol. 102 (2020) Pages. 10980-10984

7. Third-Generation Solar Cells: Concept, Materials and Performance-An Overview  
S. Ananthakumar, J. Ramkumar, **S. Moorthy Babu**,  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
Emerging Nanostructured Materials for Energy and Environmental Science, Book  
Chapter. (2019) 305-339
8. Ligand Exchange in  $\text{Cu}_2\text{ZnSnS}_4$  nanoparticles and its effect on counter electrode performance in dye sensitized solar cells  
C.Imla Mary, M.Senthilkumar and **S.Moorthy Babu**  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
Bulletin of Materials Science, 42(6) (2019) 256
9. Copper indium sulphide: Zinc sulphide (CIS:ZnS) alloyed quantum dots as an eco-friendly absorber in solar cells  
M.Senthilkumar, C.Imla Mary, M.Pandiyarajan, G.Manobalaji and **S.Moorthy Babu**  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
Bulletin of Materials Science, 42(6) (2019) 270
10. Ligand assisted tenability of morphological and optical properties of copper sulphide nanocrystals  
M.Senthilkumar, C.Imla Mary, G.Manobalaji and **S.Moorthy Babu**  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
Materials Science in Semiconductor Processing, 104 (2019) 104685
11. A modified high-temperature vapour deposition technique for fabricating  $\text{CH}_3\text{NH}_3\text{PbI}_3$  thin films under an ambient atmosphere  
G. Manobalaji, M.Pandiyarajan, M.Senthilkumar and **S.Moorthy Babu**  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
Bulletin of Materials Science, 42(6) (2019) 276
12. Role of co-sensitization in dye-sensitized and quantum dot-sensitized solar cells  
S Ananthakumar, D Balaji, JR Kumar, **S. Moorthy Babu**  
Crystal Growth Centre, Anna University, Chennai 600 025, India.  
SN Applied Sciences 1 (2), (2019)186
13. Effect of  $\text{CH}_3\text{NH}_3\text{I}$  vapour evaporation temperature on the quality of the lead-free bismuth based perovskites thin-films.  
M. Pandiyarajan, G. Manobalaji, M. Senthilkumar, **S. Moorthy Babu**, and S. Subashchandran,  
Materials Research Express Vol. 6, (2019), 066418.
14. Influence of Plasmonic  $\text{Cu}_x\text{S}$  Interfacing Layer on Photovoltaic Performance of CIZS Quantum Dot Sensitized Solar Cells.  
M.Senthilkumar, G. Zaiats, **S. Moorthy Babu** and P. V. Kamat,  
Journal of The Electrochemical Society Vol. 166, (2019), H3133-H3137.
15. Coordinating Effect of Non-phosphine Solvents on the Structure and Morphological Properties of  $\text{Cu}_2\text{SnSe}_3$  (CTSe) Nanoparticles Synthesized by Hot-Injection Method.  
S. Ananthakumar and **S. Moorthy Babu**,  
Journal of Inorganic and Organometallic Polymers and Materials Vol. 29, (2019), 477-482.
16. Room temperature ferromagnetic behavior, linear and nonlinear optical properties of  $\text{KNbO}_3$  microrods.  
S. Raja, R. Ramesh Babu, K. Ramamurthi, and **S. Moorthy Babu**,  
Ceramics International Vol. 44, (2018), 3297-3306.



17. Gas-Sensing Characteristics of SrFeO<sub>3-δ</sub> Thin Film Probed by a Homemade Apparatus.  
M. Manikandan, B. Santhosh Kumar, T. Mukil Raj, **S. Moorthy Babu**, and C. Venkateswaran,  
Journal of Electronic Materials Vol. 47, (2018), 4678-4682.
18. Exploration of photoanode characteristics of a mixed ferroelectric ZnSnO<sub>3</sub> and semiconducting Zn<sub>2</sub>SnO<sub>4</sub> phase for photovoltaic applications.  
M. Manikandan, T. Mukilraj, C. Venkateswaran, and **S. Moorthy Babu**,  
Journal of Materials Science: Materials in Electronics Vol. 29, (2018) 15106-15111.
19. Influence of different sulfur sources on the phase formation of Cu<sub>2</sub>ZnSnS<sub>4</sub> (CZTS) nanoparticles (NPs).  
C. Imla Mary, M. Senthilkumar, and **S. Moorthy Babu**,  
Journal of Materials Science: Materials in Electronics Vol. 29, (2018) 9751-9756.
20. Synthesis, crystal structure, thermal and nonlinear optical properties of new metal-organic single crystal: Tetrabromo (piperazinium) zincate (II) (TBPZ).  
K. Boopathi, **S. Moorthy Babu**, and P. Ramasamy,  
AIP Conference Proceedings Vol. 1942, (2018), 100014
21. Synthesis, crystal growth, physio-chemical characterization and quantum chemical calculations of NLO active metal-organic crystal: dibromo(4-hydroxy-L-proline)cadmium(ii) for non-linear optical applications.  
K. Boopathi, **S. Moorthy Babu**, R. Jagan, S. Athimoolam, and P. Ramasamy,  
New Journal of Chemistry Vol. 42, (2018), 17464-17477.
22. Progress on synthesis and applications of hybrid perovskite semiconductor nanomaterials—A review.  
S. Ananthakumar and **S. Moorthy Babu**,  
Synthetic Metals Vol. 246, (2018), 64-95.
23. Morphological controlled synthesis of hierarchical copper selenide nanocrystals by Oleic acid, 1-Dodecanethiol and 1-Octadecene as surfactants.  
M. Senthilkumar, C. I. Mary, and **S. Moorthy Babu**,  
Journal of Crystal Growth Vol. 468, (2017), 169-174.
24. Colloidal synthesis of copper cadmium sulphide (CuCdS<sub>2</sub>) nanoparticles and its structural, optical and morphological properties.  
K. Saravanan, R. Suriakarthick, S. Ananthakumar, **S. Moorthy Babu**, S. Selladurai,  
Materials Science in Semiconductor Processing Vol. 66, (2017), 123-130.
25. Comparative analysis of LiGd(WO<sub>4</sub>)<sub>2</sub>:Eu<sup>3+</sup> phosphors derived by sol gel and hydrothermal methods.  
K. K. Rasu, D. Balaji, and **S. Moorthy Babu**,  
Journal of Crystal Growth Vol. 468, (2017), 159-161.
26. Influence of Capping Ligand and Synthesis Method on Structure and Morphology of Aqueous Phase Synthesized CuInSe<sub>2</sub> Nanoparticles.  
J. Ram Kumar, S. Ananthakumar, and **S. Moorthy Babu**,  
Journal of Electronic Materials Vol. 46, (2017), 296-305.

27. Hydrothermally grown ZnO nanoparticles for effective photocatalytic activity.  
N.Kumaresan, K.Ramamurthi, R.Ramesh Babu, K.Sethuraman **S. Moorthy Babu**,  
Applied Surface Science Vol. 418, (2017), 138-146.
28. Enhanced efficiency of luminescence with stoichiometry control in  $\text{LiGd}(\text{W}_{(1-x)}\text{Mo}_x\text{O}_4)_2:\text{Eu}^{3+}$  red phosphors.  
K. Kavi Rasu, D. Balaji, and **S. Moorthy Babu**,  
Journal of Crystal Growth Vol. 468, (2017), 766-769.
29. Synthesis and Characterization of amine capped  $\text{Cu}_2\text{ZnSnS}_4$  (CZTS) nanoparticles (NPs) for Solar cell application.  
C. Imla Mary, S. Ananthakumar, M. Senthilkumar, and **S. Moorthy Babu**,  
Materials Today: Proceedings Vol. 4, (2017), 12484-12490.
30. Synthesis, crystal structure and growth of a new inorganic- organic hybrid compound for nonlinear optical applications: Aquadiiodo (3-aminopropanoic acid) cadmium (II).  
K. Boopathi, **S. Moorthy Babu**, R. Jagan, and P. Ramasamy,  
Journal of Physics and Chemistry of Solids Vol. 111, (2017), 419-430.
31. Colloidal synthesis and characterization of  $\text{Cu}_2\text{ZnSnS}_4$  nanoplates.  
S. Ananthakumar, J. Ram Kumar, and **S. Moorthy Babu**,  
Journal of Semiconductors Vol. 38, (2017) 033007
32. Evolution of non-phosphine solvents in colloidal synthesis of I-III-VI<sub>2</sub> and I<sub>2</sub>-II-IV-VI<sub>4</sub> group semiconductor nanomaterials – Current status.  
S. Ananthakumar, J. Ram Kumar, and **S. Moorthy Babu**,  
Materials Science in Semiconductor Processing Vol. 67, (2017), 152-174.
33. Colloidal synthesis and characterisation of oleic acid capped  $\text{TiO}_2$  nanorods.  
S. Ananthakumar, J. R. Kumar, and **S. Moorthy Babu**,  
International Journal of Nanotechnology Vol. 14, (2017), 710-718.
34. Synthesis and Characterization of Cadmium Selenide (CdSe) Nanoparticles Using Trigonal Selenium (t-Se) Nanorods as Selenium Source.  
S. Ananthakumar, J. R. Kumar, and **S. Moorthy Babu**,  
Journal of Inorganic and Organometallic Polymers and Materials Vol. 27, (2017) 569-575.
35. Crystal structure controlled synthesis and characterization of copper sulfide nanoparticles.  
M. Senthilkumar and **S. Moorthy Babu**,  
AIP Conference Proceedings Vol. 1731, (2016) 050131
36. Spectroscopic properties of  $\text{Eu}^{3+}:\text{KLa}(\text{WO}_4)_2$  novel red phosphors.  
K. K. Rasu, D. Balaji, and **S. Moorthy Babu**,  
Journal of Luminescence Vol. 170, (2016) 547-555.
37. Photoluminescence properties of  $\text{Eu}^{3+}:\text{RbGd}(\text{WO}_4)_2$  red phosphors prepared by sol-gel method.  
K. K. Rasu, D. Balaji, and **S. Moorthy Babu**,  
Journal of Luminescence Vol. 170, (2016), 825-834.
38. Role of phosphine free solvents in structural and morphological properties of  $\text{CuInSe}_2$  nanoparticles.  
J. Ram Kumar, S. Ananthakumar, and **S. Moorthy Babu**,  
Journal of Materials Science: Materials in Electronics Vol. 27, (2016)12418-12426.

39. Top Seeded Solution Growth, Structural and Vibrational Analyses of  $K_{1-x}Na_xGd(WO_4)_2$  ( $0.0 \leq x \leq 0.2$ ) Single Crystals.  
A. Durairajan, D. Thangaraju, M. A. Valente, and **S. Moorthy Babu**,  
Journal of Electronic Materials Vol. 45, (2016), 4460-4467.
40. Luminescence characterization of sol-gel derived  $Pr^{3+}$  doped  $NaGd(WO_4)_2$  phosphors for solid state lighting applications.  
A. Durairajan, D. Thangaraju, **S. Moorthy Babu**, and M. A. Valente,  
Materials Chemistry and Physics Vol. 179, (2016), 295-303.
41. Photoluminescence properties of sub-micron  $NaGd_{1-x}Eu_x (WO_4)_2$  red phosphor for solid state lightings application: Derived by different synthesis routes.  
A. Durairajan, J. Suresh Kumar, D. Thangaraju, M. A. Valente, **S. Moorthy Babu**,  
Superlattices and Microstructures Vol. 93, (2016), 308-321.
42. Sol-gel synthesis and photoluminescence analysis of  $Sm^{3+}:NaGd(WO_4)_2$  phosphors.  
A. Durairajan, D. Balaji, K. Kavi Rasu, **S. Moorthy Babu**, M. A. Valente, D. Thangaraju,  
Journal of Luminescence Vol. 170, (2016), 743-748.
43. Semiconductor nanoparticles sensitized  $TiO_2$  nanotubes for high efficiency solar cell devices.  
S. Ananthakumar, J. Ramkumar, and **S. Moorthy Babu**,  
Renewable and Sustainable Energy Reviews Vol. 57, (2016), 1307-1321.
44. Synthesis of  $Cu_2ZnSnSe_4$  hierarchical nanostructures by colloidal method.  
S. Ananthakumar, J. Ram Kumar, and **S. Moorthy Babu**,  
Optik Vol. 127, (2016), 10360-10365.
45. Photo-enhanced catalytic activity of spray-coated  $Cu_2SnSe_3$  nanoparticle counter electrode for dye-sensitised solar cells.  
S. Ananthakumar, X. Li, A. L. Anderson, P. Yilmaz, S. Dunn, **S. Moorthy Babu**,  
Physica Status Solidi - Rapid Research Letters Vol. 10, (2016), 739-744.
46. Cesium lead halide ( $CsPbX_3$ ,  $X = Cl, Br, I$ ) perovskite quantum dots synthesis, properties, and applications: A review of their present status.  
S. Ananthakumar, J. R. Kumar, and **S. Moorthy Babu**,  
Journal of Photonics for Energy Vol. 6, (2016), 042001
47. Size dependence of upconversion photoluminescence in MPA capped CdTe quantum dots: Existence of upconversion bright point.  
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### 9. Books Published /Chapters contributed

Authors	Title	Publishers	Year
S.Ananthakumar, J.Ramkumar S.Moorthy Babu	Third-Generation Solar Cells: Concept, Materials and Performance-An Overview; In Emerging Nanostructured Materials for Energy and Environmental Science, 305-339	Springer	2019
S.Moorthy Babu T.Devasena	Advanced Functional Nanomaterials	Anna University, Chennai	2017
Mahmmoud Sayed el- Sadek and S.Moorthy Babu	Characterization of CdTe and CdTe-related (Core-Shell) Nanocrystals	VDM Verlag, Berlin	2011
J.Kumar, S.Moorthy Babu S.Vasudevan	Materials Science	Vijay Nicole Imprints Pvt. Ltd., Chennai	2007
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### Books Edited

One of the editors for the

Proceedings of the National Conference on Fundamentals of Crystal Growth, Anna University, Chennai -25 (Year 1999)

Proceedings of the International Workshop on Advanced Functional Nanomaterials, Centre for Nanoscience and Technology, Anna University, Chennai-25 (2017) ISBN No.: 978352792313

## 10. Sponsored Research Projects

Funding Agency	Title of the Project	Grant Number	Total Grant	Status
IUAC-UGC	SHI irradiation and Physiochemical Characterization of beta Gallium Oxide ( $\beta$ -Ga <sub>2</sub> O <sub>3</sub> )		Rs.8,50,000 /=	Ongoing
DST-VR Sweden	Bulk crystal growth of gallium oxide and fabrication of heterojunction diodes		Rs.40,00,000 /=	Ongoing
DRDO	Development of Single Crystal Gallium Oxide (Ga <sub>2</sub> O <sub>3</sub> ) Growth Technology for Power Device Applications		Rs.1,44,00,000 /	ongoing
DST-SERI	Investigations on Perovskite based solar cells		Rs. 40,00,000/=	Completed
UGC	Development of polymer-CdTe-TiO <sub>2</sub> based nanocomposites for low cost solar cells		Rs.13,25,800 /=	Completed
DST-JSPS	Fabrication of Tandem Structured Thermoelectric Devices using SiGe Related Alloy Semiconductors		Rs.4,72,000/=	Completed
DST-JSPS	Growth of homogenous SiGe alloy semiconductor for Thermoelectric application		Rs.4,56,000 /=	Completed
DST	Development of double tungstate single crystals for Raman Laser Devices		Rs.24,00,000 /=	Completed
DRDO	Development of Raman Lasers using Sodium based Double Tungstate crystals for LIDAR and Telecommunication applications		Rs.30,33,000 /=	Completed
DST	Development of Hybrid Solar Cells		Rs.18,50,000/=	Completed
UGC	Synthesis, Growth and characterization of nanostructured optoelectronic materials	F.No.31-56/2005 (SR) dt.27.03.2006	Rs. 4,79,000 /=	Completed
IUAC	Development of NLO Devices from Stoichiometric lithium niobate single crystals	NSC/XIII.7/UFUP -38303/2780 dt.29.08.2005	Rs.3,33,000/=	Completed
DST	Stoichiometric Lithium Niobate Single Crystals for advanced non-linear devices	SR/S2/LOP-16/2003 dt.24.2.2005	Rs.24,00,000/=	Completed



European Union	Human Resource Development in Telecommunication Technologies	ASIA-LINK-CN/Asia-Link/004 (81206) dt.9.11.2004	EURO 300,000 (Rs.1.6 crore)	Completed
AICTE	Synthesis and development of nano-crystalline Semiconductor materials for advanced applications	F.No.8022/RID/N PROJ/ RPS-125/2003-04 dt. 22.3.2004	Rs. 8,00,000/=	Completed
DAE (BRNS)	Development of Laser Elements of Double Tungstates for diode pumped solid state Laser Applications	No.2002/34/BRN S/1986 dt.27.01.2003	Rs.11,22,500/=	Completed
UGC	Fast Growth of CdTe and related compounds	F.No.12-95/2001(SR) dated 10.5.2001	Rs. 2,07,560 / =	Completed
AICTE	Development and fabrication of visible LED's, laser diodes and PICs for Advanced Electronics		Rs. 4,00,000 / =	Completed

CGC-UGC:Anna University Facility

(ongoing)

Rs. 8.00 crore

DAE-NLP Growth of Laser and Non-linear crystals (completed)

Rs. 1.5 crore

#### Consultancy Work

Consultancy for the development of Thin Film Solar cells based on CIS has been on the initial stage with Ms. Maharishi Solar Pvt. Ltd., New Delhi.

Consultancy on the Development of suitable growth technology for the high yield and improvement in the quality of the Palm Candy crystals has been initiated with the KVIC, Mumbai in collaboration with a NGO.

#### 11. Member of the following Scientific Society /Organization

Life Member, Indian Association for Crystal Growth, **INDIA**

Life Member, Indian Science Congress Association, **INDIA**

Member, Optical Society of America, **USA**

Member, British Association for Crystal Growth, **UK**.

Matching Member, American Physical Society, **USA**

Executive Committee Member, Asian Society on Crystal Growth and Crystal Technology, **Japan**

Member, Indian Laser Association, **INDIA**

Fellow, Tamil Nadu Academy of Sciences, Chennai, **INDIA**

### **Other Salient Achievements**

#### **Professor Coordinator for online e-tender process of Anna University during 2012 -2020**

Program Manager for the EU-Asia Link Programme ongoing at Anna University.

Actively participated in the Entrance examination and Admission process of the Tamil Nadu professional courses.

Organising committee member of different short term and UGC- visitors programme being offered at Crystal Growth Centre.