

# Project Mapping - Project Report - physics (2018-2019)



**ARULMIGU PALANIANDAVAR COLLEGE OF ARTS AND CULTURE**

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Run by Arulmigu Dhandayuthapani Swamy Thirukkoll, H.R & C.E Dept. Government of Tamilnadu  
A Government Aided College - Affiliated to Madurai Kamaraj University, Madurai  
Dindigul Road, Palani - 624601



## 1.3 CURRICULUM ENRICHMENT - SUPPORTIVE DOCUMENTS

DEPARTMENT: PHYSICS

CLASS: II M.Sc. PHYSICS

YEAR: 2018-2019

S.No.	UNIVERSITY REG. No.	NAME OF THE STUDENT	NAME OF THE PROJECT GUIDE	TITLE OF THE PROJECT
1	B7E16601	ANITHA. K	Dr. P. KOKILA	ANALYSIS OF ZINC OXIDE NANOPARTICLES BY SOL GEL METHOD
2	B7E16602	CHINNAMUTHA MMAL. S	Mrs. S. ANITHA	PVA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION
3	B7E16603	DIVYAPRIYAD HARSHINI. S	Dr.V. AMILNAYAGAM	PREPARATION AND CHARACTERIZATION OF SnO <sub>2</sub> THIN FILMS PREPARED BY SPRAY PYROLYSIS METHOD
4	B7E16604	JESIMAYASMIN .S	Dr. R. PREMILA	PMMA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION
5	B7E16605	SELVANAYAKI. R	Dr. M. RAMESH BABU	SYNTHESIS AND CHARACTERIZATION OF Co DOPED SnO <sub>2</sub> NANOPARTICLES
6	B7E16606	SHOBANA. K	Mrs. S. ANITHA	PVA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION
7	B7E16607	SURYA. S	Dr. TAMILNAYAGAM V.	PREPARATION AND CHARACTERIZATION OF SnO <sub>2</sub> THIN FILMS PREPARED BY SPRAY PYROLYSIS METHOD
8	B7E16608	BALAMAHEENT HIRAN. D	Dr. K. KULATHURAAAN	DETERMINATION OF THE THICKNESS AND OPTICAL CONSTANTS OF PMMA TREATED WITH POROUS SILICON THIN FILM BY THE ENVELOPE METHOD
9	B7E16609	KUMAR. M	Dr. K. KULATHURAAAN	DETERMINATION OF THE THICKNESS AND OPTICAL CONSTANTS OF PMMA TREATED WITH POROUS SILICON THIN FILM BY THE ENVELOPE METHOD
10	B7E16610	MARUTHAKALI MUTHU. R	Dr. Lt. K. PAKIYARAJ	PREPARATION OF COPPEROXIDE THIN FILMS BY SPRAY PYROLYSIS

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				TECHNIQUE
11	B7E16611	SASIKANTH. S	Dr. R. PREMILA	PMMA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION
12	B7E16612	SATHISHKUMA R. S	Dr. M. RAMESH BABU	SYNTHESIS AND CHARACTERIZATION OF Co DOPED SiO <sub>2</sub> NANOPARTICLES
13	B7E16613	SENTHILKUMA R. S	Dr. Lt. K. PAKIYARAJ	PREPARATION OF COPPEROXIDE THIN FILMS BY SPRAY PYROLYSIS TECHNIQUE
14	B7E16614	SIVAKUMAR. N	Dr. K. KULATHURAN	DETERMINATION OF THE THICKNESS AND OPTICAL CONSTANTS OF PMMA TREATED WITH POROUS SILICON THIN FILM BY THE ENVELOPE METHOD
15	B7E16615	SIVASENTHILN ATHAN. K	Dr. P. KOKILA	ANALYSIS OF ZINC OXIDE NANOPARTICLES BY SOL GEL METHOD


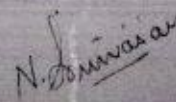
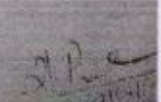

  
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**PG - PROJECT REPORT-(2018 – 2019) - BATCH**

<p>1</p>	<p><b>ANITHA. K B7E16601</b></p> <p><b>UNDER THE GUIDANCE OF Dr. P. KOKILA</b></p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled "ANALYSIS OF ZINC OXIDE NANOPARTICLES BY SOL - GEL METHOD" is a bonafied record of the original research work done by Mrs. ANITHA (REG.NO: B7E16601) during the Academic year July 2017 to April 2019 of his study in the Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani, under my guidance and the Project work has not formed the basis for the award of any Degree/Diploma/Associateship/Fellowship of similar title to any candidate of any University.</p> <p>Place : Palani Date : 05.04.2019</p> <p><i>[Signature]</i> Head of the Department</p> <p><i>[Signature]</i> External Examiner</p> <p><i>[Signature]</i> Signature of the guide</p> <p style="text-align: right;">Internal Examiner</p>
<p>2</p>	<p><b>CHINNAMUTHAMMAL. S B7E16602</b></p> <p><b>UNDER THE GUIDANCE OF Mrs. S. ANITHA</b></p>	<p><b>Mrs. S. ANITHA, M.Sc., M.Phil.,</b> Assistant Professor, Department of physics, Arulmigu Palaniandavar college of Arts and Culture, Palani - 624 601.</p> <p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled "PVA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION" bonafied work done by Ms. S.CHINNAMUTHAMMAL (REG.NO:B7E16602) and K.SHOBANA (REG.NO:B7E16606), Department of physics, Arulmigu Palaniandavar College of Arts and Culture, Palani-624 601 and submitted for the partial fulfillment degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, in my supervision and guidance during the academic year 2018-2019.</p> <p>This dissertation is an original work of the candidates and to the best of knowledge has been submitted in part or in full, for any diploma, associate ship, fellowship or other similar titles in this or any other university. No portion of the dissertation reproduction from any other source, published or unpublished without acknowledgment.</p> <p>Place: Palani Date: 11.4.2019</p> <p><i>[Signature]</i> SIGNATURE OF THE HOD</p> <p>EXTERNAL EXAMINER</p> <p style="text-align: right;">GU</p>

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<p>3</p>	<p><b>DIVYAPRIYADHARSHINI. S B7E16603</b></p> <p><b>UNDER THE GUIDANCE OF Dr.V.TAMILNAYAGAM</b></p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the project report entitled <b>"Preparation and Characterization of SnO<sub>2</sub> Thin film prepared by Spray Pyrolysis"</b> is a bonafide work done by PALANI - 624 - 601 S.DIVYAPRIYADHARSHINI (REG.NO.B7E16603 ) and S.SURYA (REG.NO.B7E16607) Department of Physics, Arulmigu Palaniandavar Arts College for Arts and Culture, Palani-624 601 and submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, under my supervision and guidance during the academic year 2018-2019.</p> <p>This dissertation is an original work of the candidate and to the best of my knowledge has not been submitted in part or in full, for any diploma, degree, associate ship, fellowship or other similar titles in this or any other university. No Portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>Place: Palani Date: 13-04-2019</p> <p style="text-align: right;">Guide  <b>[TAMILNAYAGAM.V]</b></p> <p><b>EXTERNAL EXAMINERS :</b></p>
<p>4</p>	<p><b>JESIMAYASMIN.S B7E16604</b></p> <p><b>UNDER THE GUIDANCE OF Dr. R. PREMILA</b></p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled <b>"PMMA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION"</b> is a bonafide work done by Ms. S.JESIMA YASMIN (REG.NO.B7E16604) and Mr. S.SURYA (REG.NO.B7E16611), Department of physics, Arulmigu Palaniandavar Arts College for Arts and Culture, Palani-624 601 and submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, under my supervision and guidance during the academic year 2018-2019.</p> <p>This dissertation is an original work of the candidates and to the best of my knowledge has not been submitted in part or in full, for any diploma, associate ship, fellowship or other similar titles in this or any other university. No portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p style="text-align: right;">   <b>EXTERNAL EXAMINER</b> </p> <p style="text-align: right;">   <b>GUIDE</b> </p> <p style="text-align: right;">   <b>SIGNATURE OF THE HOD</b> </p>

  
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<p>5</p>	<p>SELVANAYAKI. R B7E16605</p> <p>UNDER THE GUIDANCE OF Dr.M.RAMESH BABU</p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled "SYNTHESIS AND CHARACTERIZATION OF CO DOPED SNO<sub>2</sub> NANOPARTICLES", is a bonafide record of the original research work done by R.SELVANAYAKI (REG.NO.B7E16605) during the Academic year July 2018 to April 2019 of his study in the Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani, under my guidance and the Project work has not formed the basis for the award of any Degree/Diploma/Associate ship/Fellowship of similar title to any candidate of any University.</p> <p>Place : Palani Date : 13-04-2019</p> <p><i>[Signature]</i> Head of the Department</p> <p><i>[Signature]</i> Signature of the Guide</p> <p><i>[Signature]</i> External Examiner</p> <p><i>[Signature]</i> Internal Examiner</p>
<p>6</p>	<p>SHOBANA. K B7E16606</p> <p>UNDER THE GUIDANCE OF Mrs.S.ANITHA</p>	<p>Mrs. S. ANITHA, M.Sc., M.Phil., Assistant Professor, Department of physics, Arulmigu Palaniandavar college of Arts and Culture, Palani - 624 601.</p> <p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled "PVA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION" : bonafide work done by Ms. S.CHENMUTHAMMAL (REG.NO.B7E16602) and K.SHOBANA (REG.NO.B7E16606), Department of physics, Arulmigu Palaniandavar College of Arts and Culture, Palani-624 601 and submitted for the partial fulfillment degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, is my supervision and guidance during the academic year 2018-2019.</p> <p>This dissertation is and original work of the candidates and to the best of knowledge has been submitted in part or in full, for any diploma, associate ship, fellowship or similar titles in this or any other university. No portion of the dissertation reproduction from any other source, published or unpublished without acknowledgment.</p> <p>Place: Palani Date: 11-4-2019</p> <p><i>[Signature]</i> SIGNATURE OF THE HOD</p> <p><i>[Signature]</i> EXTERNAL EXAMINER</p> <p><i>[Signature]</i> GU</p>


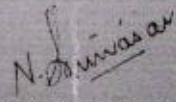
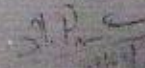
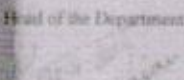
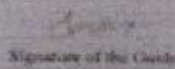
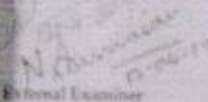
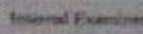
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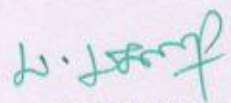
<p>7</p>	<p><b>SURYA. S</b> <b>B7E16607</b></p> <p><b>UNDER THE GUIDANCE OF</b> <b>Dr.V.TAMILNAYAGAM</b></p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is certify that the project report entitled <b>"Preparation and Characterization of SnO<sub>2</sub> Thin film prepared by Spray Pyrolysis"</b> is a bonafied work done by <b>PALANI 624 601 S.DIVYAPRIYADHARSHINI (REG NO B7E16603 )</b> and <b>S SURYA (REG NO B7E16607)</b> Department of Physics, Arulmigu Palaniandavar Arts College for Arts and Culture, Palani 624 601. And submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai , under my supervision and guidance during the academic year 2018-2019.</p> <p>This dissertation is an original work of the candidate and to the best of my knowledge has not been submitted in part or in full, for any diploma, degree, associate ship, fellowship or other similar titles in this or any other university. No Partion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>Place: Palani Date: 13-04-2019</p> <p style="text-align: right;">Guide <i>V. Tamilnayan</i> <b>(TAMILNAYAGAM.V)</b></p> <p><b>EXTERNAL EXAMINERS :</b></p>
<p>8</p>	<p><b>BALAMAHERNTHIRAN. D</b> <b>B7E16608</b></p> <p><b>UNDER THE GUIDANCE OF</b> <b>Dr. K.KULATHURAAAN</b></p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the project report entitled <b>"DETERMINATION OF THE THICKNESS AND OPTICAL COSNTANTS OF PMMA TREATED WITH FORGUS SILICON THIN FILM BY THE ENVELOPE METHOD"</b> is a bonafied work done by <b>BALAMAHERNTHIRAN, D (Reg. No. B7E16608), KUMAR, M (Reg. No. B7E16609)</b> and <b>SIVAKUMAR, N (Reg. No. B7E16614)</b>, Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani – 624 601 and submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, under my supervision and guidance during the academic year 2018-2019.</p> <p>This dissertation is an original work of the candidate and to the best of my knowledge has not been submitted in part or in full, for any diploma, degree, associate ship, fellowship or other similar titles in this or any other university. No portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>Place: Palani Date: 05.04.2019</p> <p style="text-align: right;">In-charge <b>(KULATHURAAAN.K)</b></p> <p style="text-align: center;"><i>[Signature]</i> <b>5/4/2019</b> <b>Head of the Department</b></p> <p style="text-align: right;"><i>[Signature]</i> <b>External Examiner</b></p> <p><b>Internal Examiner</b></p>

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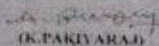

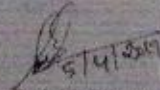
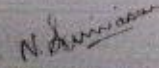
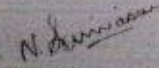
<p>9</p>	<p><b>KUMAR. M B7E16609</b></p> <p><b>UNDER THE GUIDANCE OF Dr.K.KULATHURAAAN</b></p>	<p><b>Dr. K. KULATHURAAAN</b> Assistant Professor Department of Physics Arulmigu Palaniandavar College of Arts and Culture Palani - 624 601.</p> <p><b>CERTIFICATE</b></p> <p>This is to certify that the project report entitled "DETERMINATION OF THE THICKNESS AND OPTICAL CONSTANTS OF PMMA TREATED WITH FORDUS SILICON THIN FILM BY THE ENVELOPE METHOD" is a bonafide work done by <b>BALAJAIHENTHURAN, D</b> (Reg. No. B7E16608), <b>KUMAR, M</b> (Reg. No. B7E16609) and <b>SEVAKUMAR, N</b> (Reg. No. B7E16614), Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani - 624 601 and submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, under my supervision and guidance during the academic year 2018-2019.</p> <p>This dissertation is an original work of the candidate and to the best of my knowledge has not been submitted in part or in full, for any diploma, degree, associate degree, fellowship or other similar titles in this or any other university. No portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>Place: Palani Date: 05-04-2019</p> <p><i>(Signature)</i> <b>Internal Examiner</b></p> <p><i>(Signature)</i> <b>Head of the Department</b></p> <p><i>(Signature)</i> <b>External Examiner</b></p> <p><i>(Signature)</i> <b>K. Kulathuraan</b> (KULATHURAAAN, K)</p>
<p>10</p>	<p><b>MARUTHAKALIMUTHU. R B7E16610</b></p> <p><b>UNDER THE GUIDANCE OF Lt.Dr. K. PAKIYARAJ</b></p>	<p>APRIL - 2019</p> <p><b>Dr. K. K. PAKIYARAJ</b> Assistant Professor Associate N.E.C. Officer Department of Physics Arulmigu Palaniandavar College of Arts and Culture Palani - 624 601.</p> <p><b>CERTIFICATE</b></p> <p>This is to certify that the project report entitled "PREPARATION OF COPPER OXIDE THIN FILMS BY SPRAY PYROLYSIS TECHNIQUE" is a bonafide work done by <b>S.SENTHIL KUMAR</b> (Reg. No. B7E16613) and <b>MARUTHAKALIMUTHU</b> (Reg. No. B7E16610), Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani - 624 601 and submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, under my supervision and guidance during the academic year 2018-2019. This dissertation is an original work of the candidate and to the best of my knowledge has not been submitted in part or in full, for any diploma, degree, associate degree, fellowship or other similar titles in this or any other university. No portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>Place: Palani Date: 02-04-2019</p> <p><i>(Signature)</i> <b>Internal Examiner</b></p> <p><i>(Signature)</i> <b>Head of the Department</b></p> <p><i>(Signature)</i> <b>External Examiner</b></p> <p><i>(Signature)</i> <b>K. Pakiyaraj</b> (K.PAKIYARAJ)</p>

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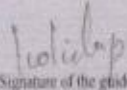
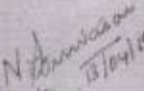
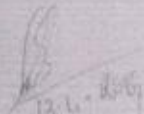
<p>11</p>	<p>SASIKANTH. S B7E16611</p> <p>UNDER THE GUIDANCE OF Dr.R PREMILA</p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled "PMMA/GO BASED POLYMER ELECTROLYTES FOR FUEL CELL APPLICATION" is a bona fide record of the original research work done by Ms. S.JESIMA YASMIN (REG.NO.B7E16604) and Mr. SASIKANTH (REG.NO.B7E16611), Department of physics, Arulmigu Palaniandavar College of Arts and Culture, Palani-624 601 and submitted for the partial fulfillment of the Degree of Science in Physics to the Madurai Kamaraj University, Madurai, under my guidance during the academic year 2018-2019.</p> <p>The dissertation is an original work of the candidates and to the best of my knowledge has not been submitted in part or in full, for any diploma, associate ship, fellowship or other award in this or any other university. No portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>   <b>SIGNATURE OF THE HOD</b>   <b>EXTERNAL EXAMINER</b>   <b>GUIDE</b> </p>
<p>12</p>	<p>SATHISHKUMAR. S B7E16612</p> <p>UNDER THE GUIDANCE OF Dr. M. RAMESH BABU</p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled "SYNTHESIS AND CHARACTERIZATION OF CO DOPED SnO<sub>2</sub> NANOPARTICLES", is a bona fide record of the original research work done by S. SATHISHKUMAR (REG.NO.B7E16612) during the Academic year July 2017 to April 2019 of his study in the Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani, under my guidance and the Project work has not formed the basis for the award of any Degree/Diploma/Associate ship/Fellowship of similar title to any candidate of any University.</p> <p>Place: Palani Date: 15/04/19</p> <p>   <b>Head of the Department</b>   <b>Signature of the Guide</b> </p> <p>   <b>External Examiner</b>   <b>Internal Examiner</b> </p>

  
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<p>13</p> <p><b>SENTHILKUMAR. S</b> <b>B7E16613</b></p> <p><b>UNDER THE GUIDANCE OF</b> <b>Lt.Dr.K.PAKIYARAJ</b></p>		<p style="text-align: center;">APRIL 2019</p> <p>Dr. K. PAKIYARAJ Assistant Professor Associate NCU Officer Department of Physics Arulmigu Palaniandavar College of Arts and Culture Palani - 624 601.</p> <p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the project report entitled "PREPARATION OF COPPER OXIDE THIN FILMS BY SPRAY PYROLYSIS TECHNIQUE" is a bonafide work done by S.SENTHIL KUMAR (Reg. No. B7E16613) and K.MARUTHAKALAMUTHU (Reg. No. B7E16610), Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani - 624 601 and submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, under my supervision and guidance during the academic year 2018/2019. This dissertation is an original work of the candidate and to the best of my knowledge has not been submitted in part or in full, for any diploma, degree, associate ship, fellowship or other similar titles in this or any other university. No portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>Place: Palani. Date: 24.04.2019</p> <p style="text-align: right;">   <b>(K.PAKIYARAJ)</b>  <b>EXTERNAL EXAMINER</b> </p>
<p>14</p> <p><b>SIVAKUMAR. N</b> <b>B7E16614</b></p> <p><b>UNDER THE GUIDANCE OF</b> <b>Dr.K.KULATHURAAAN</b></p>		<p>Dr. K. KULATHURAAAN Assistant Professor Department of Physics Arulmigu Palaniandavar College of Arts and Culture Palani - 624 601.</p> <p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the project report entitled "DETERMINATION OF THE THICKNESS AND OPTICAL CONSTANTS OF PMMA TREATED WITH PORESUS SILICON THIN FILM BY THE ENVELOPE METHOD" is a bonafide work done by BALAMAHENTHERAN, D (Reg. No. B7E16608), KUMAR, M (Reg. No. B7E16609) and SIVAKUMAR, N (Reg. No. B7E16614), Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani - 624 601 and submitted for the partial fulfillment of degree of Master of Science in Physics to the Madurai Kamaraj University, Madurai, under my supervision and guidance during the academic year 2018/2019.</p> <p>This dissertation is an original work of the candidate and to the best of my knowledge has not been submitted in part or in full, for any diploma, degree, associate ship, fellowship or other similar titles in this or any other university. No portion of the dissertation is a reproduction from any other source, published or unpublished without acknowledgement.</p> <p>Place: Palani. Date: 05.04.2019</p> <p style="text-align: right;">   <b>(KULATHURAAAN K)</b> </p> <p style="text-align: center;">   <b>Internal Examiner</b> </p> <p style="text-align: center;">   <b>Head of the Department</b> </p> <p style="text-align: right;">   <b>External Examiner</b> </p>

  
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<p>15</p>	<p>SIVASENTHILNATHAN. K B7E16615</p> <p>UNDER THE GUIDANCE OF Dr.P.KOKILA</p>	<p style="text-align: center;"><b>CERTIFICATE</b></p> <p>This is to certify that the dissertation entitled "ANALYSIS OF ZINC OXIDE NANOPARTICLES BY SOL - GEL METHOD" is a bonafied record of the original research work done by Mr. K.SIVASENTHILNATHAN (REG.NO. B7E16615) during the Academic year July 2017 to April 2019 of his study in the Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani, under my guidance and the Project work has not formed the basis for the award of any Degree/Diploma/Associateship/Fellowship of similar title to any candidate of any University.</p> <p>Place : Palani Date : 05.04.2019</p> <p> Head of the Department</p> <p> Signature of the guide</p> <p> Internal Examiner</p> <p> Internal Examiner</p>
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