Declaration by the candidate

I, S. Amudhan Senthan, hereby declare that this thesis, entitled, *Synthesis, Luminescence, and Electrochemical Studies of Polynuclear Ruthenium(II) Complexes of Tolylterpyridine Appended Calixarenes and Calixresorcarenes*, submitted to the University of Madras, in partial fulfillment of the requirement for the award of the degree of Doctor of Philosophy, is a record of the independent work done by me during the period July 2007 to April 2014 under the guidance of Dr. V. Alexander, Department of Chemistry, Loyola College, Chennai 600034. This work has not formed the basis for the award of any other diploma, degree, or any other similar title in any institution or university to the best of my knowledge.

Place: Chennai-600034

Date: May 05, 2014

S. AMUDHAN SENTHAN
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Chennai-600034

S. AMUDHAN SENTHAN

May 05, 2014
Suscipe

Take, Lord, and receive all my liberty,
my memory, my understanding
and my entire will,
All I have and call my own.

You have given all to me.
To you, Lord, I return it.

Everything is yours; do with it what you will.
Give me only your love and your grace.
That is enough for me.

-St. Ignatius of Loyola
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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</thead>
<tbody>
<tr>
<td>2,3-dpp</td>
<td>2,3-bis(2-pyridyl)pyrazine</td>
</tr>
<tr>
<td>2,5-dpp</td>
<td>2,5-bis(2-pyridyl)pyrazine</td>
</tr>
<tr>
<td>ADP</td>
<td>adenosine diphosphate</td>
</tr>
<tr>
<td>ATP</td>
<td>adenosine triphosphate</td>
</tr>
<tr>
<td>BiBzIm</td>
<td>2,2'-bibenzimidazole</td>
</tr>
<tr>
<td>BPTZ</td>
<td>3,6-bis(2-pyridyl)tetrazine</td>
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<tr>
<td>bpy</td>
<td>2,2'-bipyridine</td>
</tr>
<tr>
<td>bpzt</td>
<td>3,5-bis(pyrazin-2-yl)-1,2,4-triazole</td>
</tr>
<tr>
<td>chrysi</td>
<td>5,6-chrysene quinine diimine</td>
</tr>
<tr>
<td>DART</td>
<td>direct analysis in real time</td>
</tr>
<tr>
<td>DMF</td>
<td>N,N-dimethylformamide</td>
</tr>
<tr>
<td>DMSO</td>
<td>dimethyl sulfoxide</td>
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<td>DNA</td>
<td>deoxyribonucleic acid</td>
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<td>dpbq</td>
<td>2,3-bis(2'-pyridyl)benzo[g]quinoxaline</td>
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<tr>
<td>ESI-TOF</td>
<td>electron spray ionization time of flight</td>
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<tr>
<td>HAT</td>
<td>1,4,5,8,9,12-hexaaazatriphenylene</td>
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<tr>
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<tr>
<td>LEC</td>
<td>light emitting electrochemical cell</td>
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<tr>
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</tr>
<tr>
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<td>metal to ligand charge transfer</td>
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<td>oak ridge thermal ellipsoid plot</td>
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<tr>
<td>phen</td>
<td>1,10-phenanthroline</td>
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<tr>
<td>phi</td>
<td>phenanthrenequinone</td>
</tr>
<tr>
<td>phzi</td>
<td>benzo[a]phenazine-5,6-quinonediimine</td>
</tr>
<tr>
<td>PMD</td>
<td>photoluminescent molecular devices</td>
</tr>
<tr>
<td>ppz</td>
<td>4',7'-phenanthrolino-5',6':5,6-pyrazine</td>
</tr>
<tr>
<td>tpp</td>
<td>2,3,5,6-tetrakis(2'-pyridyl)pyrazine</td>
</tr>
<tr>
<td>tpy</td>
<td>2,2':6',2''-terpyridine</td>
</tr>
<tr>
<td>ttpy</td>
<td>4'-(p-tolyl)-2,2':6',2''-terpyridine</td>
</tr>
<tr>
<td>UV</td>
<td>ultraviolet</td>
</tr>
</tbody>
</table>
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