

CONTENTS

	Page No.
Acknowledgements	
List of Symbols& Abbreviations	
List of Figures	
List of Tables	
Preface	
<i>Chapter 1: General Introduction</i>	1-31
1.1. Organically Modified Silicates	4
1.2. An Overview of Nanostructured Metal Oxide	6
1.2.1 Physical Properties	
1.2.2 Chemical Properties	
1.3. An Overview on nanocomposite made with sol-gel glasses/organically modified sol-gel glasses	12
1.3.1 Chemistry of Sol-Gel Process	13
(a) Mixing	14
(b) Hydrolysis	14
(c) Condensation	14
(d) Polycondensation	15
(e) Gelation	15
(f) Ageing	15
(g) Drying	16
(h) Chemical stabilization / dehydration	16
(i) Densification	16
1.3.2 Structure of Sol-Gel process based nanomaterials	17
(a) Physico chemical Methods	17
(b) Electrochemical Methods	19
1.3.3 Applications of organically modified silicate and their nanocomposite	20
(a) Electrochemical sensors based on nanocomposite of Metal oxides and organically modified silicate	21
(i) Methods of electrode modification	22
(ii) Mode of sensing	25
1.4. Origin of present research programme	27
1.5. Objective of the present investigation	29

1.6. Work plan for the present investigation	30
<i>Chapter 2: Synthesis and application of Ormosil film in the presence of TiO₂ and Pd-linked glycidoxypropyltrimethoxy silane</i>	32-55
2.1. Introduction	33
2.2. Experimental	36
2.3. Results and discussion	39
2.4. Conclusions	54
<i>Chapter 3: Synthesis and application of Pd-TiO₂-SiO₂ nanocomposite</i>	56-75
3.1. Introduction	57
3.2. Experimental	60
3.3. Results and discussion	62
3.4. Conclusions	75
<i>Chapter 4: Synthesis and applications of Pd-WO₃-SiO₂ nanocomposite</i>	76-102
4.1. Introduction	77
4.2. Experimental	81
4.3. Results and Discussion	84
4.4. Conclusion	101
SUMMARY	103-105
REFERENCES	106-136
List of Publication	
Personal Profile	