

إستفتاح

بسم الله الرحمن الرحيم

قال تعالى:

لَا هُوَ الْجَاهِلِيُّ لِأَدْقِيَّتِهِمْ إِلَّا تَأْخُذُهُ سِينَةٌ وَلَا نَوْمٌ لَهُ مَا فِي السَّمَوَاتِ وَمَا فِي الْأَرْضِ مَنْ ذَا
فَعُ عِنْدَهُ إِلَّا أَلْبَابُ النَّبِيِّينَ يَعْلَمُ مَا بَيْنَ أَيْدِيهِمْ وَمَا خَلْفَهُمْ وَلَا يُحِيطُونَ بِشَيْءٍ مِنْ عِلْمِهِ إِلَّا بِمَا
شَاءَ وَسِعَ كُرْسِيُّهُ السَّمَاوَاتِ وَالْأَرْضَ وَلَا يَئُودُهُ حِفْظُهُمَا وَهُوَ الْعَلِيُّ الْعَظِيمُ (255)

سورة البقرة

صدق الله العظيم

Dedication

I dedicate this work to my
Parents, Brothers and Sisters.

Acknowledgment

I would like to thank Allah Almighty, who gave me strength and good health to complete this work.

Thanks are due for Dr. Mohammed Suleiman Ali, Who never failed to guide me.

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Abstract

Tetraethyl orthosilicate (TEOS) was prepared by chemical methods using two methods, direct method and indirect method by using copper oxide supporting on alumina catalyst, from silicon dioxide and diethyl ether using acid catalyst of hydrochloric acid (11.8M). The sol gel process was applied for the preparation of nano silica gel. This method involves hydrolysis and condensation reaction of TEOS, the mechanism of this method was explained and showed formation of a network Si-O-Si chemical linkage form the alkoxy silane, the yield of tetraethyl orthosilicate was characterized by FT-IR spectroscopy, the results obtained indicating that, the bond of Si-O-Si successfully formed. And the comparison between two method was studied and results showed that, the rate of reaction of TEOS which was prepared by direct method was equal to 0.008g/sec and prepared by using catalyst was equal to 0.275g/sec, indicating that, the tetraethyl orthosilicates that which prepared by indirect method by using catalyst was better than the direct method.

المستخلص

تم تحضير مركب أورثو سليكات الصوديوم باستخدام الطرق الكيميائية وتم ذلك باستخدام طريقتين: الطريقة المباشرة والطريقة غير المباشرة واستخدام فيها حفاز من أكسيد النحاس المدعم بالالومينا من مركب ثنائي أكسيد السليكون النقي وثنائي إيثيل إيثر عن طريق الحفز في وسط حمضي (حمض الهيدروكلوريك 11.8م). وتم تطبيق طريقة السول جل لتكوين النانو سليكا جل وشرحت الميكانيكية لهذا التفاعل والتي أظهرت تكوين رابطة السليكوسين وقد تم تشخيص المركب الناتج باستخدام طيف الأشعة تحت الحمراء وأظهرت النتائج المتحصل عليها علي تكوين رابطة السليكوسين وتم إجراء مقارنة بين كلا من الطريقتين وتم إيجاد معدل التفاعل لأورثو سليكات الصوديوم المحضره بالطريقة المباشره وتساوي 0.008 جم/ث وباستخدام الحفاز وتساوي 0,275 جم /ث. وأظهرت النتائج المتحصل عليها علي أن تحضير أورثو سليكات الصوديوم باستخدام الحفاز أفضل من تحضيره بالطرق المباشرة.

List of contents

No	Title	Page No
	إستفتاح	I
	Dedication	II
	Acknowledgment	III
	Abstract (English)	IV
	المستخلص	V
	List of Contents	VI
	List of Tables	X
	List Figures	XI
1	Chapter One Introduction	1
1.1	Organic silica	2
1.1.1	Structure of the Silicates	3
1.1.2	Physical Properties of Organic Silicates	6
1.1.3	Chemical Properties of Organic Silicates	8
1.1.4	Uses	10
1.2	Catalysis	11
1.2.1	Catalysis in Industry	12
1.2.2	General Acid/Base Catalysis	13

1.2.3	Important of Catalysis	15
1.3	Sol gel Chemistry	16
1.3.1	Sol-Gel Polymerization of Tetraethylorthosilicate	18
1.4	Tetra ethylortho Silicate	19
1.4.1	Properties of Tetraethyl OrthoSilicate	21
1.4.2	Application of Tetraethyl Ortho Silicate	22
1.5	Other Study about Copper Oxide Supported On Alumina and Silica Catalyst	22
1.6	Objectives	25
2	Chapter Two Materials and Methods	26
2.1	Apparatus and Equipment	26
2.2	Chemicals	26
2.3	Preparation Methods	26
2.3.1	Preparation of ultra pure silicon dioxide	26
2.4	Synthesis method	27
2.4.1	Synthesis of Silicon Alkoxide by direct method	27
2.4.2	Synthesis of Silicon Alkoxide by using copper oxide supported on alumina catalyst	27

2.5	Characterization Methods	28
2.5.1	Melting point of Tetraethylorthosilicate which prepared by Two Methods	28
2.5.2	Comparison between Tetraethylorthosilicate Which Prepared By Direct Method and By Using Catalyst	28
2.5.2.1	Percentage of Yield	28
2.5.2.2	Rate of Reaction	28
2.5.2.2.1	Rate of Reaction of silicon Alkoxide	28
2.5.3	FT-IR Spectroscopy	29
3	Chapter Three Results and Discussion	30
3.1	Preparation method	30
3.1.1	Practical weight of silicon dioxide	30
3.1.2	Practical weight of Silicon Alkoxide by direct method	30
3.1.3	Practical weight of silicon Alkoxide by using catalyst	31
3.1.3.1	Reaction energetic	31
3.2	Characterization methods	32
3.2.1	FT-IR	32
3.2.1.1	FT-IR of Tetraethyl Orthosilicate Which Preparation by Direct Method	32
3.2.1.2	FT-IR of Tetraethyl Orthosilicate	34

	Which preparation by using catalyst	
3.3	Rate of Reaction	37
3.3.1	Time of Initial Formation of Silicon Alkoxide	37
3.3.2	Time of Initial Formation of silicon Alkoxide by using catalyst	38
3.4	Conclusion	40
3.5	Recommendations	41
	References	41

List of Tables

No	Title	Page No
1.1	Physical Properties of Some Metal Ethoxides	7
1.2	Properties of Tetraethyl OrthoSilicate	21

List of Figures

No	Title	Page No
1.1	Organic Silicates	3
1.2	Heterogeneous catalysis	12
1.3	Charge Development in the transition state for ester hydrolysis	14
1.4	Mechanism of general acid catalysis	14
1.5	Mechanism of general base catalysis	14
1.6	Summary of the key steps in sol-gel polymerization of ethoxysilanes	16
1.7	Sol-gel Process	17
1.8	Mechanism for hydrolysis and condensation of alkoxysilanes	19
1.9	Tetraethyl OrthoSilicate	20
3.1	Effect of a Catalyst on Equilibrium	31
3.2	Spectrum of IR of tetraethyl orthosilicate which prepared by direct method	33
3.3	Spectrum of IR of tetraethyl orthosilicate which prepared by using catalyst	34