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## APPENDICES

### Appendix A Silatrane Synthesis

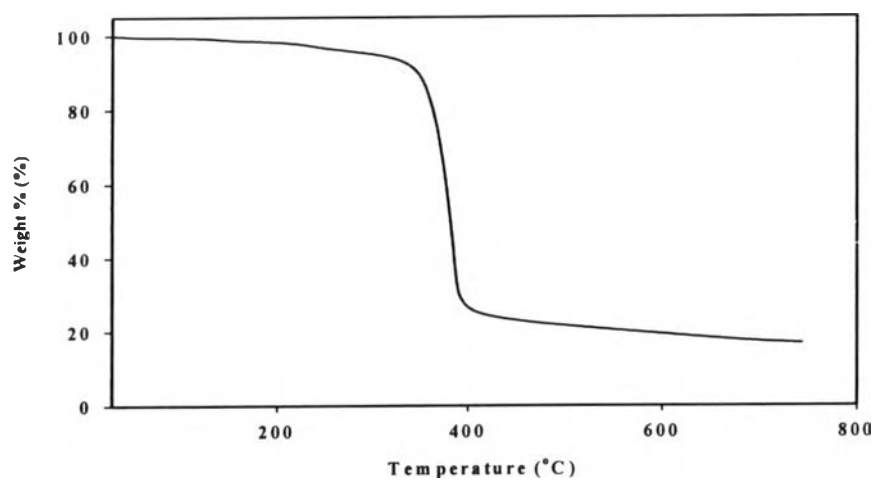
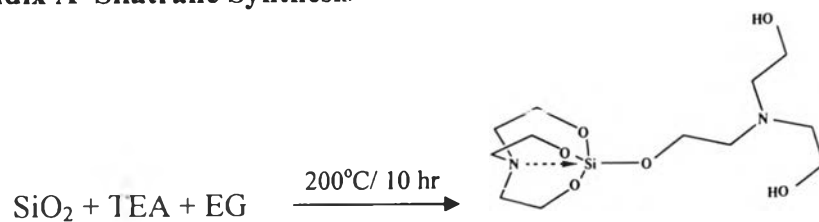


Figure A1 TGA of silatrane

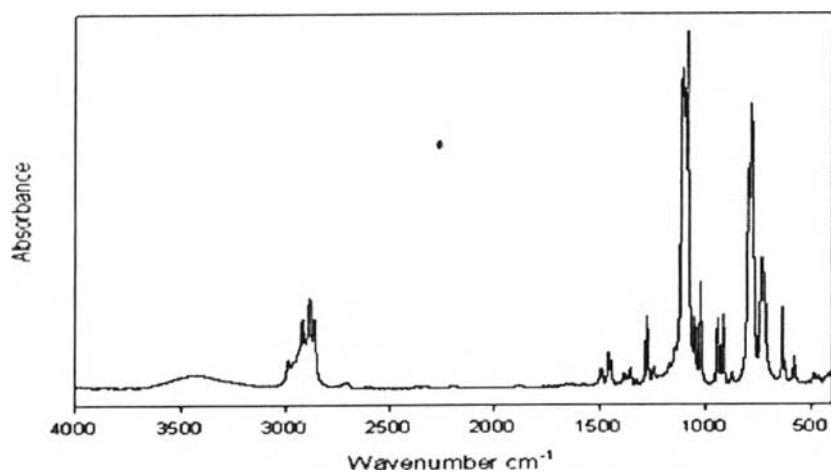


Figure A2 FTIR of silatrane

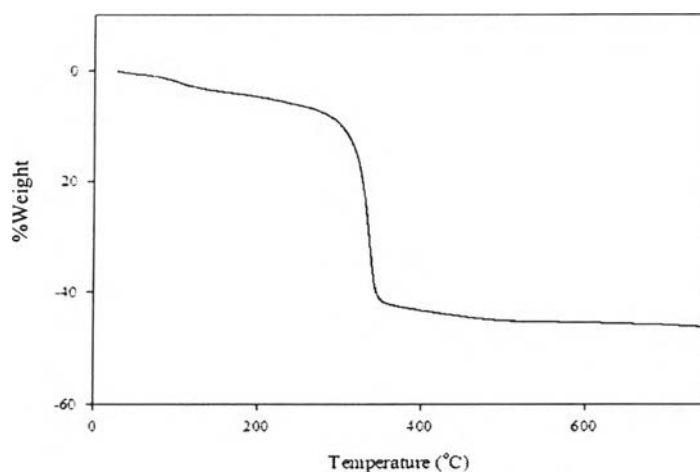
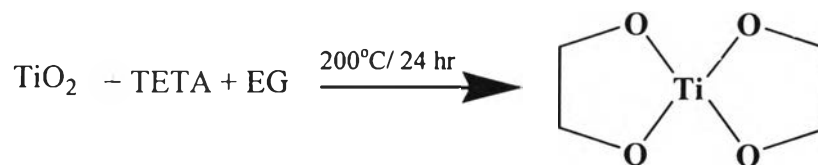


**Table A1** FTIR spectrum of silatrane

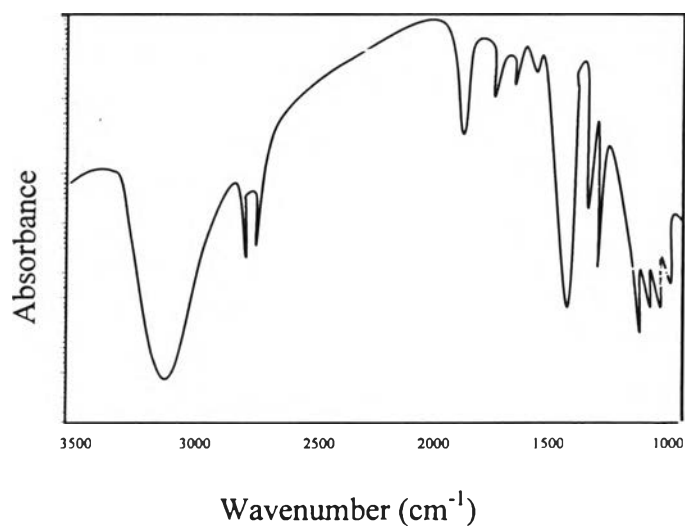
Peak Positions (cm-1) Assignments		Peak Positions (cm-1)	Assignments
3100-3700	b, $\nu$ O-H	1276	m, $\nu$ C-O
2800-3000	s, $\nu$ C-H	1040-1180	b & vs, $\nu$ Si-O
2750-2670	w, Si<--N)	786	vs, $\delta$ Si-O-C
1445, 1459, 1493	m, $\delta$ C-H	735	s, $\delta$ Si-O-C
1351	w, $\nu$ C-N	576	w, Si<--N

FAB<sup>+</sup>-MS showed the highest m/e at 669 of Si<sub>3</sub>((OCH<sub>2</sub>CH<sub>2</sub>)<sub>3</sub>N)<sub>4</sub>H<sup>+</sup> and 100% intensity at 323 of Si((OCH<sub>2</sub>CH<sub>2</sub>)<sub>3</sub>N)<sub>2</sub>H<sup>+</sup>.

## Appendix B Titanium Glycolate synthesis



**Figure B1** TGA of titanium glycolate



**Figure B2** FTIR of titanium glycolate

**Table B1** FTIR spectrum of titanium glycolate

Peak Positions (cm-1)	Assignments	Peak Positions (cm-1)	Assignments
3100-3700	b, $\nu$ O-H	1073	s, $\nu\bar{C}-O$
2860-2986	s, $\nu$ C-H	1049	s, $\nu$ Si-O
1244-1275	m, $\nu$ C-N	1021	s, $\nu$ C-O
1170-1117	bs, $\nu$ Si-O	785, 729	s, $\nu$ Si-O-C
1093	s, $\nu$ Si-O-C	579	w, Si $\leftarrow$ ---N

FAB<sup>+</sup>-MS: showed m/e 169 with 8.5% intensity of Ti(OCH<sub>2</sub>CH<sub>2</sub>O)<sub>2</sub>.

### Appendix C Molybdenum Glycolate Synthesis

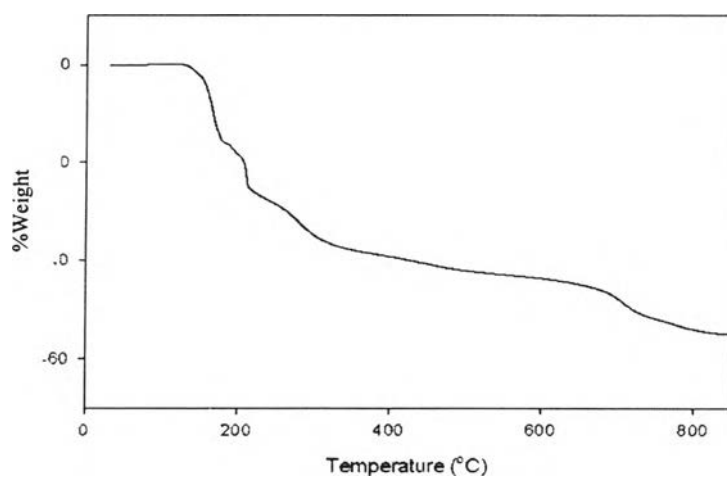
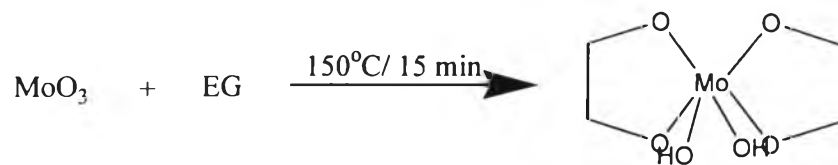


Figure C1 TGA of molybdenum glycolate

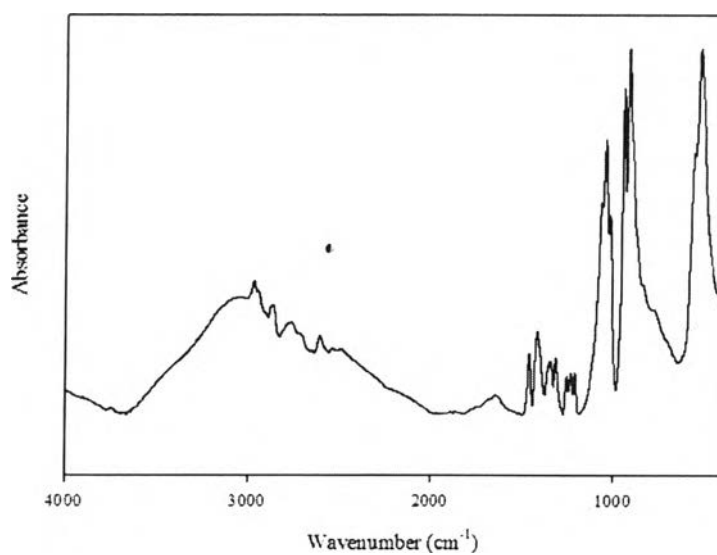
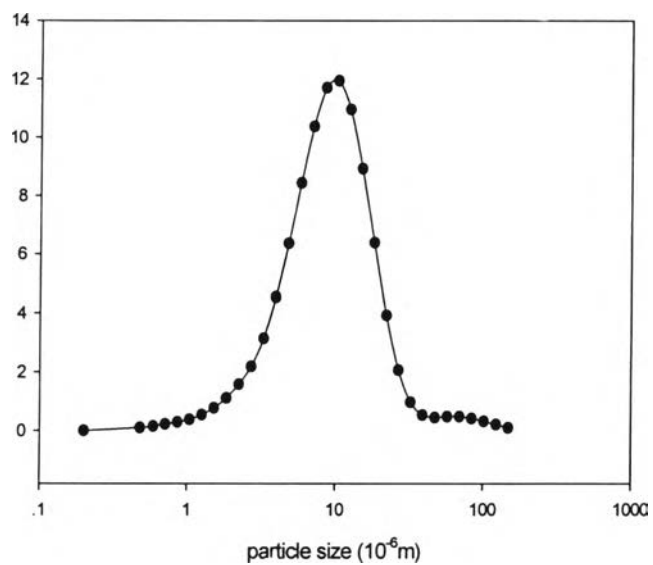
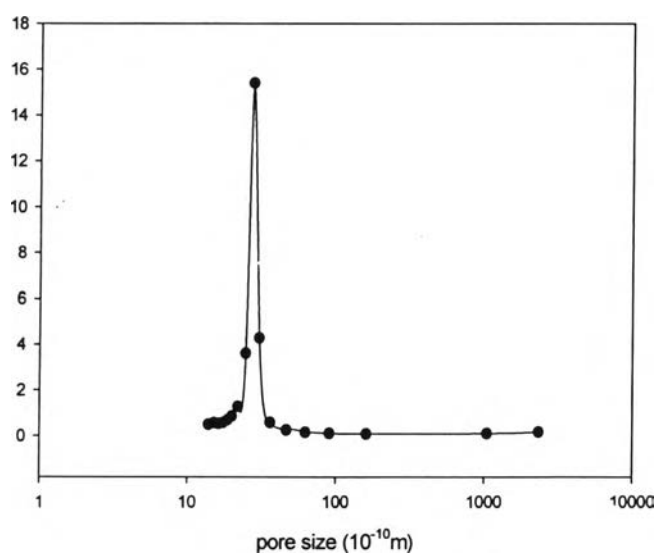


Figure C2 FTIR of silatrane

**Table C1** FTIR spectrum of silatrane

Peak Positions (cm-1)	Assignments	Peak Positions (cm-1)	Assignments
3500-3000	s,νOH	946	νMo-O-C
2968-2860	νC-H	533	νM-O
1344-1258	νCH-OH		

**Appendix D Micro and Macro Structure of MCM-41****Figure D1** Particle size distribution of MCM-41**Figure D2** Pore size distribution of MCM-41

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4. Thanabodeekij, N., Sadthayanon, S., Gulari, E. and Wongkasemjit, S. (2005) Extremely High Surface Area of Ordered Mesoporous MCM-41 by Atrane Route. Materials Chemistry and Physics, in press.
5. Thanabodeekij, N., Gulari, E. and Wongkasemjit, S. (2005) Bi<sub>12</sub>TiO<sub>20</sub> Synthesized Directly from Bismuth (III) Nitrate Pentahydrate and Titanium Glycolate and Its Activity. Powder Technology, in press.

6. นพพร ธนบดีกิจ, มุทิตา พงษ์มาลา และ สุจิตรา วงศ์เกษมจิตต์. (2545) กระบวนการโซล-เจล. วารสารวิจัยวิทยาศาสตร์ (Section T) คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย. 1(2), 369-383.
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**Precedings:**

1. Thanabodeekij, N., Tanglumlert, W., Gulari, E. and Wongkasemjit, S. (2004, December 6-7) Effect involving the formation of extremely high surface area MCM-41. Proceeding of Micro-and Mesoporous Mineral Phases 2004, Rome, Italy.

**Presentation:**

1. Thanabodeekij, N., Tanglumlert, W., Gulari, E. and Wongkasemjit, S. (2004, December 6-7) Effect involving the formation of extremely high surface area MCM-41. Proceeding of Micro-and Mesoporous Mineral Phases 2004, Rome, Italy.