

**Ain Shams University  
Faculty of Science  
Chemistry Department**



# **Effect of some prepared superplasticizers on the rheology and setting time of the oil well cement slurries**

**A Thesis**

**Submitted to Department of Chemistry – Faculty of Science  
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## **Approval Sheet**

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# *Dedication*

*To my parents*

*To my dear wife*

*To my lovely kids*

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*Samir hosny shafek*



<b>Symbol</b>	<b>Description</b>
<b>C<sub>3</sub>S</b>	Tricalcium silicate (Alite phase)
<b>β-C<sub>2</sub>S</b>	β – dicalcium silicate (Belite phase)
<b>C<sub>3</sub>A</b>	Tricalcium aluminate (Auminate phase)
<b>C<sub>4</sub>AF</b>	Tetracalcium aluminoferrite (Ferrite phase)
<b>HPC</b>	High performance concrete
<b>OWC</b>	Oil well cement
<b>SCM</b>	Supplementary cementitious material
<b>HSR</b>	High sulphate-resistant
<b>MSR</b>	Moderate sulphate resistant
<b>OPC</b>	Ordinary Portland cement
<b>HPC</b>	High performance concrete
<b>XRD</b>	X-ray diffraction
<b>FTIR</b>	Fourier transform infrared
<b>DSC</b>	Differential scanning calorimetry
<b>SEM</b>	Scanning electron microscopy
<b>CSH</b>	Calcium silicate hydrate

## ABBREVIATIONS

<b>CH</b>	Calcium hydroxide
<b>C<math>\bar{C}</math></b>	Calcium carbonate
<b>C<sub>2</sub>AH<sub>8</sub> or C<sub>4</sub>AH<sub>13</sub></b>	Calcium aluminate hydrate
<b>C<sub>2</sub>ASH<sub>8</sub></b>	Calcium aluminosilicate hydrate (gehlenite)
<b>(C<sub>3</sub>A.3C<math>\bar{S}</math>.32H)</b>	Calcium sulphoaluimonate hydrate (ettringite)
<b><math>\mu_p</math></b>	Plastic viscosity
<b><math>\tau</math></b>	Shear stress
<b><math>\tau_0</math></b>	Yield stress
<b><math>\gamma^\bullet</math></b>	Shear rate



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