Biomass Fly Ash in Concrete 2

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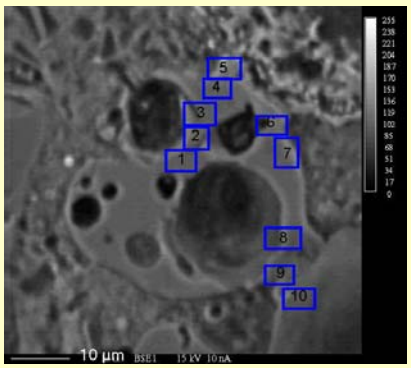
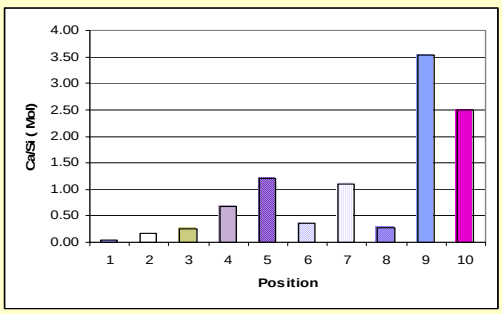
$$3Ca(OH)_2+2SiO_2+4H_2O \rightarrow Ca_3Si_2O_7 \bullet 4H_2O$$

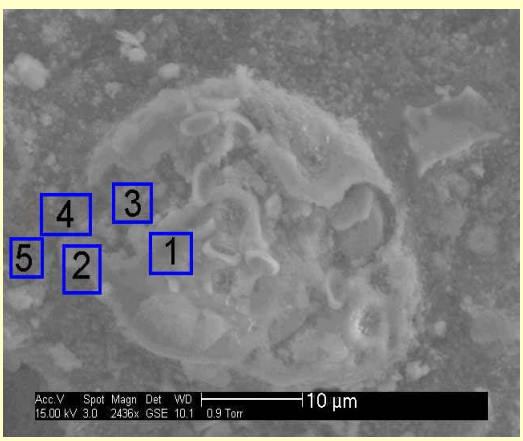
Reactive Particles



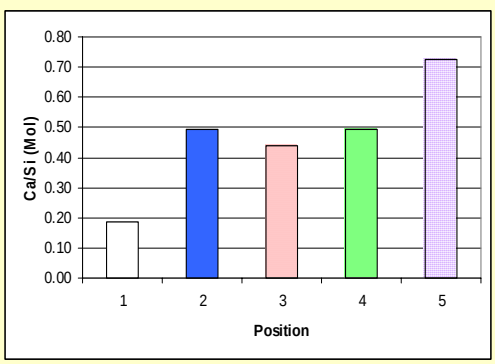
Reactive SW1 Fly Ash Particle (approx. 300 days)



Mol Ratio of Ca/Si of Reactive SW1 Fly Ash Particle



Reactive SW2 Fly Ash Particle (1-year)



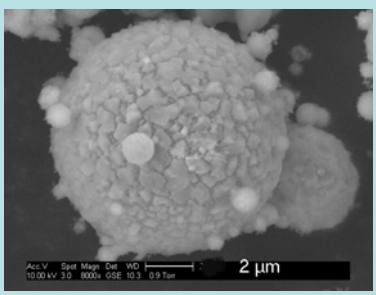
Mol Ratio of Ca/Si of Reactive SW2 Fly Ash Particle

- Pozzolanic reaction between fly ash and lime (product of the cementitious reaction) accounts for later concrete strength buildup.

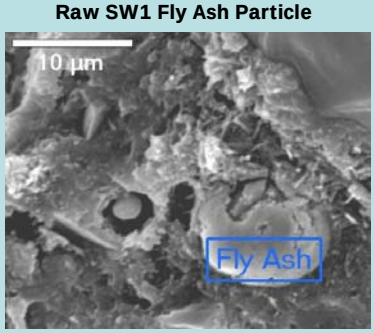
Fly Ash Classification

- SW1: 20% switch grass co-fired with 80% Galatia coal
- SW2: 10% switch grass co-fired with 90% Galatia coal

Raw vs. Reactive Particles

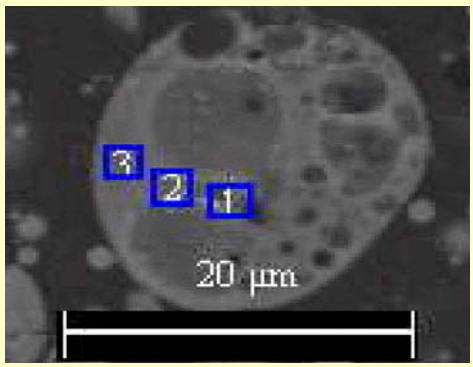


Raw SW1 Fly Ash Particle

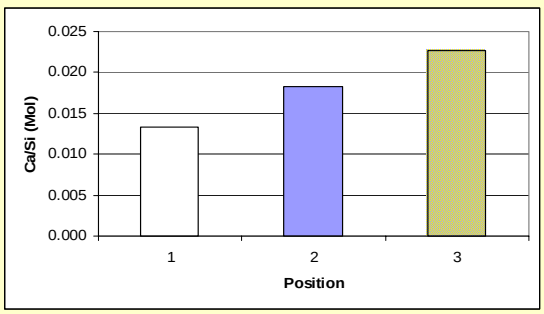


Reactive SW1 Fly Ash Particle

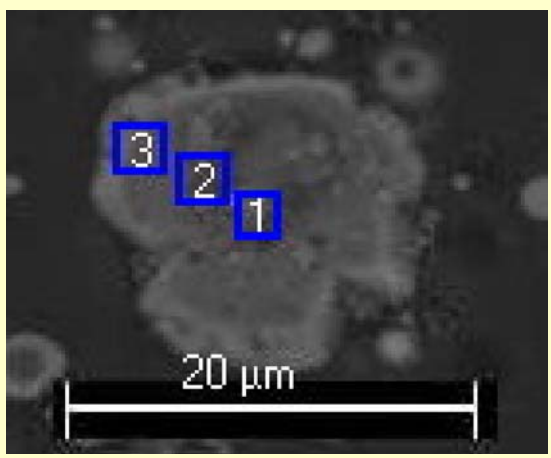
Raw Particles



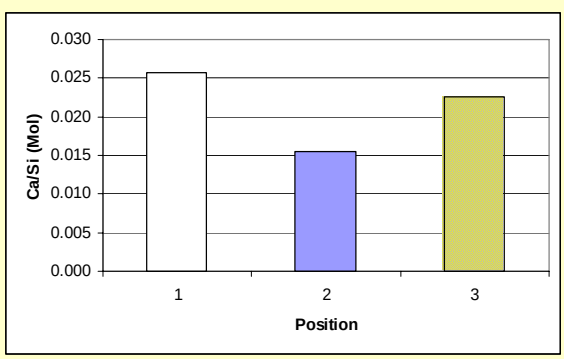
Raw SW1 Fly Ash Particle



Mol Ratio of Ca/Si of Raw SW1 Fly Ash Particle



Raw SW2 Fly Ash Particle



Mol Ratio of Ca/Si of Raw SW2 Fly Ash Particle