























- ii. in comparison on the four location (Abraka, Bayelsa, Port Harcourt and Ughelli) Optimum compressive strength was attained at Abraka
- iii. Comparison of locations Bayelsa and Port Harcourt fell below the compressive control strength. however, 50% replacement from Ughelli location at 28 days also attained an increased compressive strength (30.22Nmm<sup>2</sup>)

### Recommendation

Based on the conclusions arrived at, the following recommendations are made for future work:

- Volume replacement methods are recommended to investigate the possibility of producing high strength concrete with white river sand fume.
  - Detailed cost analysis should be carried out to determine the level of savings from the use of the white river sand fume in concrete. as either Admixture or Replacement
  - It is recommended that testing of concrete produced with river white sand fume concrete be extended to 56 or possibly 90 days to further determine the pozzolanic ability of the white river sand fume
  - It will therefore be recommended that if the River white sand fume is going to be used as a concrete constituent should not be at 100% of the cement constituent to be used.
  - Also research should be carried out using the River White sand as Admixture for improved compressive stress of concrete

cement ratio on the properties of high-strength concrete after exposure to high temperatures. *Cem. Concr. Compos.* 30(2), 106–112 (2008)

- [7] **De Larrard, F and Belloc, A (1992)** "Are Small Aggregates Really Better for Making High-Strength Concrete Under Direct Shear". *ACI Material Journal*. Vol. 90. No. 2, pp 122-133.
- [8] **Gilbert, R, I.(2008)** "Control of Flexural Cracking in Reinforced Concrete" *Structural Journal*, Vol. 105, No. 3, pp 301-307.
- [9] Grutzeck, M., Atkinson, S., Roy, D.M.: Mechanism of hydration of condensed silica fume in calcium hydroxide solutions. *ACI Special Publications SP-79 (2)*, pp. 643–664 (1983)
- [10] Langan, B.W., Weng, K., Ward, M.A.: Effect of silica fume and fly ash on heat of hydration of Portland Cement. *Cem. Concr. Res.* 32(7), 1045–1051 (2002)
- [11] **Matthew S. H and Rolf E (2008)** "Behavior and Testing of Anchors in Simulated Seismic Cracks" *Structural Journal*, Vol. 105, No. 3, pp 348-357. *ACI*
- [12] Mazloom, M., Ramezani-pour, A.A., Brooks, J.J.: Effect of silica fume on mechanical properties of high-strength concrete. *Cem. Concr. Compos.* 26(4), 347–357 (2004) [11]
- [13] On... (2016) "Volume Batching Method of Concrete" *Journal Of Civil Engineers* ISSN 01897691 Vol.11

### References

- [1] **Asselanis, J. G., Aitcin, P-C., and Mehta, P. K.,(1989)** "Effect of Curing Conditions on the Compressive Strength and Elastic Modulus of Very High-Strength Concrete" *Cement, Concrete, and Aggregates*, Vol. 11, No. 1, pp 80-83.
- [2] Arjun Kumar, Lakhbir Singh, Anil Singh: Study of partial replacement of cement by silica fume. ISSN 2320-5407. *International Journal of Advanced Research* (2016), Volume 4, Issue 7, 104-120
- [3] **Balaguru, P. N.and Dipsia, M. G.(1993)** "Properties of Fiber Reinforced High-Strength Semilightweight Concrete" *ACI Materials Journal*, Vol. 90, No. 5, pp 399-405
- [4] **Bentur, A. and Goldman, A.,(1989)** "Curing Effects, Strength and Physical Properties of High Strength Silica Fume Concretes" *Journal of Materials in Civil Engineering*, Vol. 1, No. 1, pp 46-58.
- [5] **Baluch, M. H., Al-Nour, L. A. R., Azad, A. K., Al-Mandil, M. Y., Sharif, A. M., and Pearson-Kirk, D.,(1989)** "Concrete Degradation due to Thermal Incompatibility of its Components" *Journal of Materials in Civil Engineering*, Vol. 1, No. 3, pp 105-118
- [6] Behnood, A., Ziari, H.: Effects of silica fume addition and water to