



Efficient soft computing models to evaluate the impact of silicon dioxide (SiO_2) to calcium oxide (CaO) ratio in fly ash on the compressive strength of concrete

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Abstract

Environmental issues are raised from global warming due to raised Carbon Dioxide (CO_2) emissions of factories worldwide. Cement production provides about 8–10% of the total CO_2 emissions to the environment. Cementitious materials, such as fly ash, are suggested as the best alternatives to cement as the main ingredient of concrete. Fly ash is a powder finer than cement, almost rich in silica and alumina. The current study investigated the effect of the ratio of SiO_2/CaO in fly ash on the compressive strength of cement-based concrete modified with different fly ash contents and classes for various mix proportions. 236 fly ash-modified concrete samples were examined, evaluated, and modeled for that