

## Experimental study on compression behaviors of Fe-SMA confined concrete

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### ABSTRACT

The current study performs an experimental validation of the effectiveness of using Iron-based shape memory alloy (SMA) for concrete confinement. The Fe-SMA, manufactured and processed into strip shape was used to actively confine concrete cylinders. Uniaxial compression tests were carried out for concrete cylinders confined with Fe-SMA strips and carbon fiber reinforced polymer (CFRP) sheet. Test results revealed that high levels of recovery stress (360 MPa) of the Fe-SMA strips provided effective confining pressure to concrete. It was found that the specimens confined with Fe-SMA exhibited greatly enhanced compression behaviors in terms of deformation and energy dissipation capacities, compared with those of the unconfined and CFRP confined specimens.

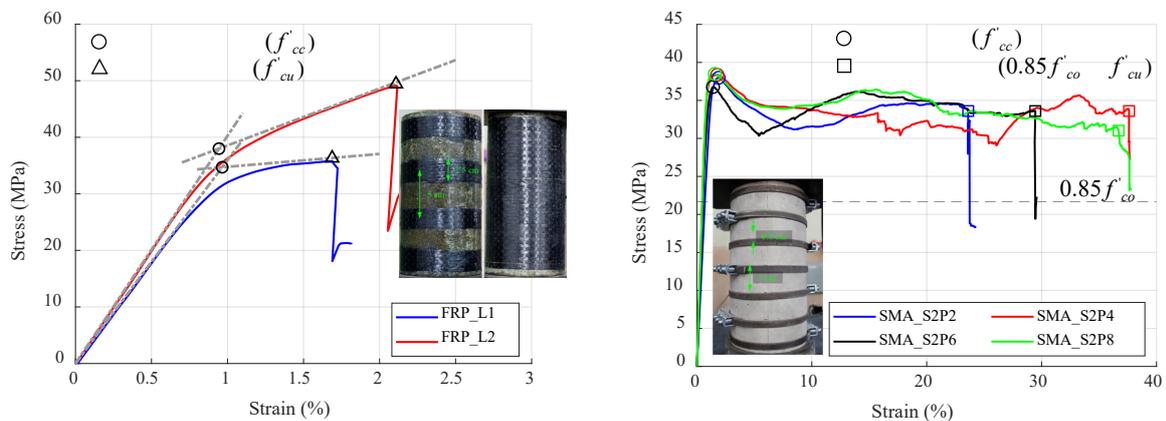


Fig. 1 Compressive Behavior of Concrete Cylinders (CFRP and Fe-SMA confined)

### REFERENCES

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Hong, K. N., Lee, S. W., and Yeon, Y. M. (2018), "Evaluation of Fe-based shape memory alloy as strengthening material for reinforced concrete structures", *Applied Sciences*, **8**(5), 730.