

## Research project

Steel corrosion in reinforced concrete (RC) has always drawn researchers and engineers' attention because it can lead the decrease of capacity of RC structures and induce the severe durability problem. This is a vital problem all around the world that is closely associated with human lives and property security. Currently, many effective solutions have been provided by researchers in this field. Among these, the impressed current cathodic protection (ICCP) technique has been proved that is one of the most effective measures to solve the corrosion of steel embedded in concrete, while the structural strengthening (SS) technique is a significant measure to recover the capacity and improve the durability of deteriorated RC structures. Fabric reinforced cementitious matrix (FRCM) is a composite material consisting of one or more layers of cement-based matrix reinforced with dry fiber in the form of open mesh or fabric. This composite has been used to strengthen masonry and RC structures since almost 10 years ago which is a relative younger in the strengthening system. It can be found that the carbon fiber mesh in FRCM composite has a potential to act as anode material in ICCP technique. Accordingly, the dual-system of ICCP-SS has been proved to retard corrosion of steel and increase the capacity of RC structures in which the Carbon - FRCM composite acts as anode and strengthening material simultaneously. The appropriate Carbon-FRCM composite will be obtained in the first stage, then the monotonic and fatigue flexural performance of RC beams strengthened with this kind of FRCM under ICCP technique will be investigated to make it clear in the application field of FRCM composite. The following is a schematic diagram of RC beam strengthened with FRCM under ICCP technique which means the RC beam repaired by ICCP-SS system.

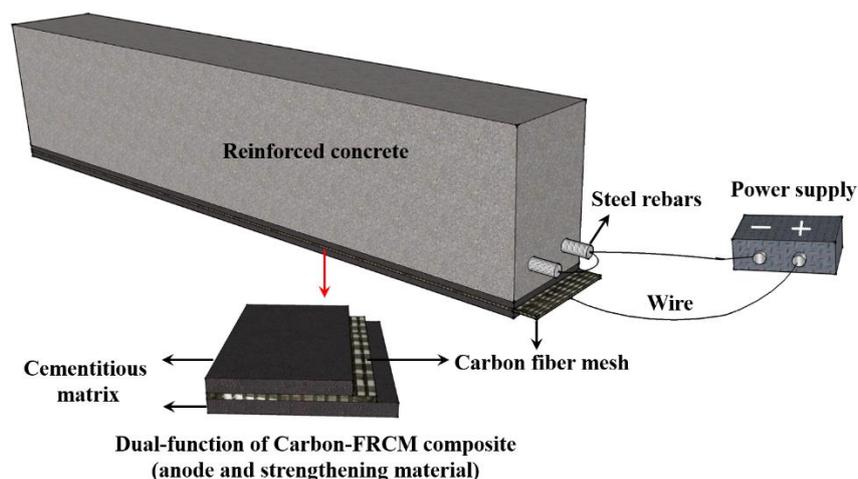


Figure 1. Schematic diagram of RC beam repaired by ICCP-SS system.