Creating directed fluid flow and mixing fluids at the micro-scale is very difficult because of the low Reynolds number environment. Passive mixers, like stationary obstacles inside a fluid cell, are not as effective as active mixers. Posts made from PDMS and containing magnetic nanoparticles are obstacles which can be magnetically actuated. Actuation with current carrying wires as opposed to permanent magnets being used in the lab right now can allow for more precise control of individual post movements, however, the field strength needed to actuate the posts is much higher than that which can be achieved by a current carrying wire alone. We use COMSOL, Gauss meter measurements, and analytical calculations to begin to explore how/whether a magnetic coating surrounding a wire placed alongside the post array could significantly amplify the field strength enough to affect the actuation of the posts.