ABSTRACT: An electromagnetic cloak is a material layer that surrounds a given subset of space, and which has the property that the cloak itself and any object placed inside the cloak is completely undetectable by electromagnetic inspection. In this talk I shall provide a review of recent results about the existence and effectiveness of cloaks and approximate cloaks, constructed by so-called ”mapping” techniques. The underlying physical equation is the (single frequency) Helmholtz equation or the full Wave equation.