Buckling of an elastic wire inside an elastic matrix  TIANXIANG SU, JIA LIU, Harvard University, DENIS TERWAGNE, MIT, KATIA BERTOLDI, Harvard University, PEDRO REIS, MIT — Using both experiment and dynamic simulation results, we will discuss in this talk how a compressed elastic wire embedded within an elastic matrix buckles into two dimensional (2D) planar shape and then three dimensional (3D) helical shape. We will show that the transitions from the initial 1D to 2D and then 3D configurations can be tuned by and are highly sensitive to the supporting matrix stiffness. This property may be useful for future photonic and piezoelectric devices. Analytic buckling and post-buckling analysis will also be presented to rationalize our results.