Structural and Magnetic Characterizations of $Y_xCo_y$ Nanowires$^1$
BISHNU DAHAL, KESHAB SAPKOTA, RAJENDRA DULAL, PARSHU GYAWALI, IAN L. PEGG, JOHN PHILIP, Catholic University of America —
Nanowires of $Y_xCo_y$ ($Y_2Co_{17}$, $YCo_3$ and $YCo_5$) are grown using electrospinning
 technique and by annealing at high temperature. The size of the nanowires varies
from 80 – 300 nm in diameter. Structural analyses show that $Y_2Co_{17}$ exhibits rhombohedral
 crystal structure while $YCo_5$ displays hexagonal crystal structure. The
as-grown nanowires are polycrystalline in nature with an average grain size of 40
nm. $YCo_3$ nanowires are amorphous in nature. All the $Y_xCo_y$ nanowires are found
to be strong ferromagnetic materials as reported in the bulk system. The observed
coercivity of the $Y_xCo_y$ nanowires is low, typically around 500 Oe in comparison to
the large coercivity observed in YCo nanoparicles

$^1$National Science Foundation, Grant No. ECCS-0845501 and DMR-0922997

Bishnu Dahal
Catholic University of America

Date submitted: 13 Nov 2013