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Titanium oxide nanofibers decorated nickel-rich cathodes as high performance electrodes in lithium ion batteries

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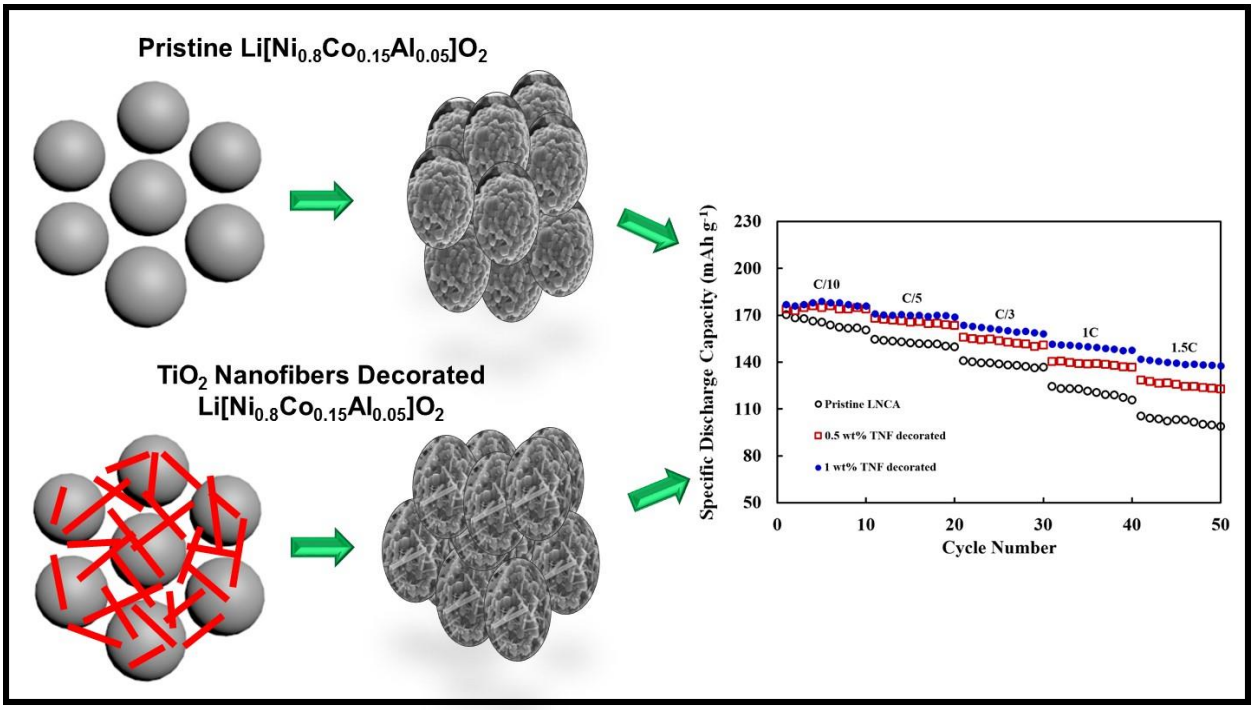
Graphical Abstract



ABSTRACT

TiO_2 nanofibers (TNF) are prepared by electrospinning method and they are decorated over the surface of $Li[Ni_{0.8}Co_{0.15}Al_{0.05}]O_2$ (LNCA) cathodes at three different ratios. The structural, electrochemical, and thermal characteristics of TNF-decorated LNCAs are compared with pristine LNCA. The TNF-decorated LNCA electrodes demonstrate better cycleability and specific capacity than those of the pristine LNCA. Under the current density of a C/10 rate, 1 wt% TNF-decorated LNCA delivers 89.2% and 81.4% of capacity retention at room temperature and elevated temperature, respectively. The onset temperature of