**ABSTRACT**

To increase the volumetric discharge capacity of negative electrode for rechargeable lithium batteries, a composite anode SnxSbyCuz has been synthesized by using high energy mechanical ball milling method. The synthesized composite anode materials have been characterized by X-ray diffraction and SEM analysis. The charge/discharge characteristics of the fabricated coin cells have been evaluated galvanostatically in the potential range 0.01–2 V using 1 M LiPF6 in 1:1 EC/DEC as electrolyte. Results indicate that the composition with 90 wt% Sn, 8 wt% Sb and 2 wt% Cu delivers an average discharge capacity of 740 mAh g−1 over the investigated 50 cycles which is a potential candidate for use as an anode material for lithium rechargeable cells.