ABSTRACT

Varied compositions in the barium strontium titanate ternary system were prepared through the slow injection sol–gel technique. Nickel dopant was introduced through a general formula of Ba$_1$–xSr$_x$Ti$_{1-y}$N$_{iy}$O$_3$ ($x = 0.4$ and $0.5$; $y = 0.1$ and $0.4$ mol-%). Thermogravimetric analysis revealed that barium strontium titanate gels were completely dried and stabilised at 1000°C. All barium strontium titanate samples were confirmed as phase pure perovskite by qualitative X-ray diffraction analysis in which Nickel-doped subsolidus solution was formed successfully after calcinations at 1000°C. On the other hand, there was a sign of agglomeration discernible in the prepared BST samples and the grain sizes were found to be in the range of 39.66–71.87 nm.

**Keyword:** DRAM; Nickel-doped barium strontium titanate; Sol-gel technique; Surface morphology; Thermogravimetric analysis; X-ray diffraction pattern