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YOUNG SCIENTISTS in CERAMICS**

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and
BOOK OF ABSTRACTS**

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**SYNTHESIS, STRUCTURE AND ELECTROCHEMICAL
PERFORMANCE OF NiMn₂O₄**

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NiMn₂O₄, with a cubic spinel structure and numerous and various applications in modern technology, were synthesized with two synthetic routes: sol-gel combustion method with glycine as fuel and electrospinning method with polyvinylpyrrolidone (PVP). Both amorphous powders from sol-gel synthesis and as-spun fibers from electrospinning synthesis were calcined, electrospun fibers at 400 °C and the sol-gel synthesized powders at 800 °C. Electrospun fibers were previously characterized with DTA-TGA to investigate the influence of thermal process on a polymer fiber.

The obtained powders were characterized accordingly. Structural analysis was done via X-ray diffraction (XRD) and results show spinel structure with no impurity. The texture and morphology was investigated via N₂ physisorption and transmission electron microscopy (TEM), respectively. Chemical states of elements were investigated by X-ray photoelectron spectroscopy (XPS). The electrochemical performance of the synthesized materials as supercapacitors was tested via cyclic voltammetry (CV), electric impedance spectroscopy (EIS), and chronopotentiometry (CP) to acquire galvanostatic charge-discharge (GCD) curves. Experiments were done in 6 M KOH solution with nickel foam as a working electrode. The results show good electrochemical capacity circa 200 F/g, with the potential for further structural improvement of the materials.