

## **ABSTRAK**

Kajian ini melaporkan penyediaan stanum dioksida, stanum monoksida dan oksida campuran yang berasaskan stanum dengan menggunakan tindakbalas suhu rendah dan tindakbalas biasa keadaan pepejal. Stanum dioksida sebagai bahan separa amorfus disediakan dengan melarutkan stanum diklorida dihidrat dalam air untuk menghasilkan gel stanum dioksida tanpa penambahan agen pemendakan. Kadar pembentukan gel dipengaruhi oleh kepekatan larutan timah, masa pengacauan dan suhu. Stanum monoksida berhablur disediakan secara memanaskan larutan stanum diklorida dan menambahkan larutan ammonium hidroksida secukupnya. Pembentukan pemendakan ini dipengaruhi oleh masa pengacauan, suhu dan kuantiti ammonium hidroksida. Kedua-dua stanum dioksida dan stanum monoksida digunakan sebagai reagen pemula untuk penyediaan vanadium stanum oksida dan litium stanum oksida; pencirian bahan dijalankan dengan keadah XRD, DTA, TGA dan FTIR.

## **ABSTRACT**

This work reports the preparation of tin dioxide, tin monoxide and tin-based mixed oxides using low-temperature and conventional solid-state reactions. The tin dioxide was prepared as a semi-amorphous material, by dissolving tin dichloride dihydrate in water, which gives a gel of tin dioxide without the addition of a precipitating agent. The concentration of tin in the solution, stirring time and the temperature affect the rate of formation of the gel. The tin monoxide is prepared as a crystalline material by briefly heating a solution of tin dichloride and then adding an appropriate amount of ammonium hydroxide to this solution. The stirring time, temperature and the quantity of ammonium hydroxide influence the formation of the precipitate. Both tin dioxide and tin monoxide are used as starting reagents for the preparation of vanadium tin oxide and lithium tin oxide. The materials have been characterised by XRD, DTA, TGA and FTIR methods.