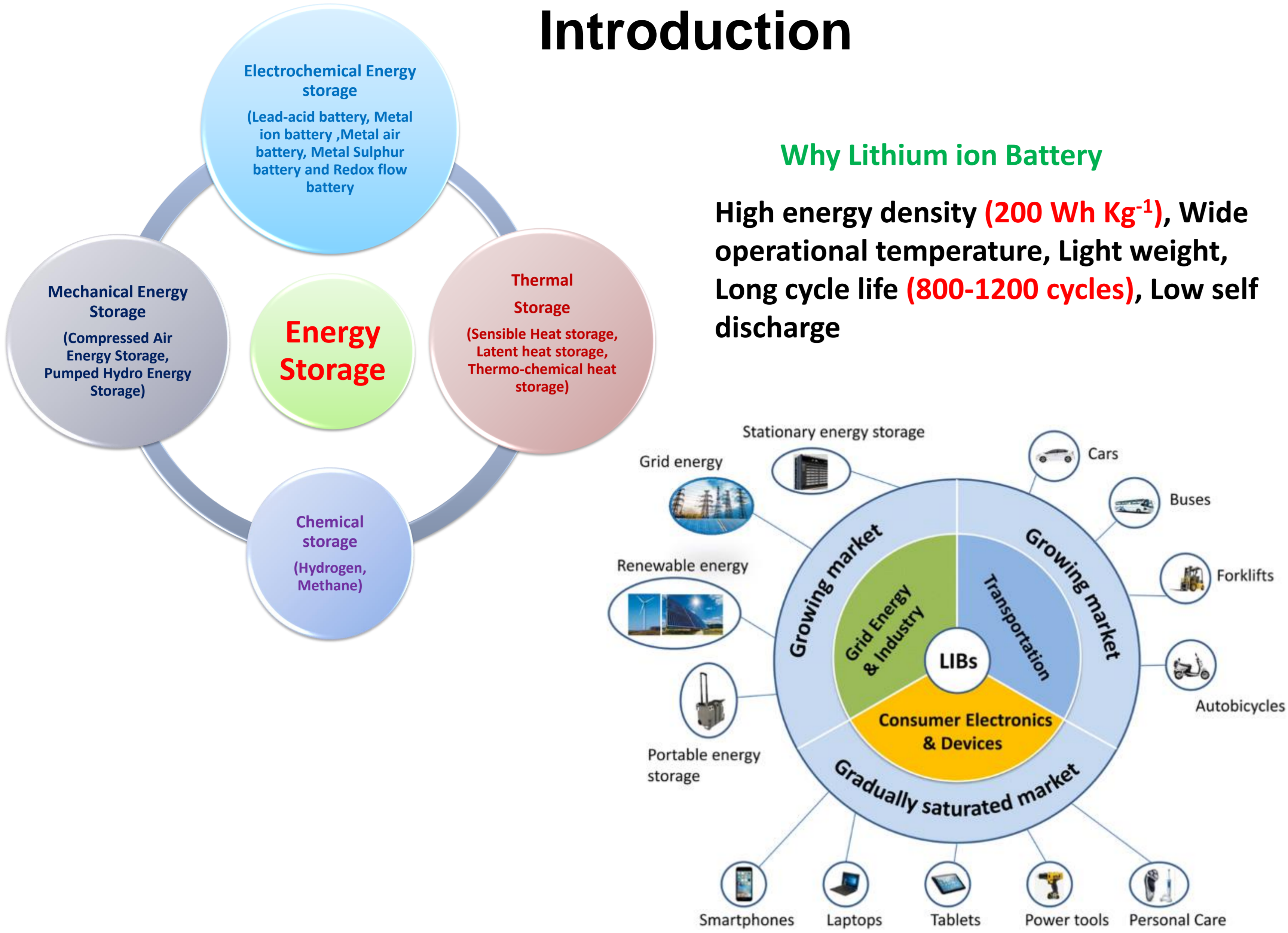
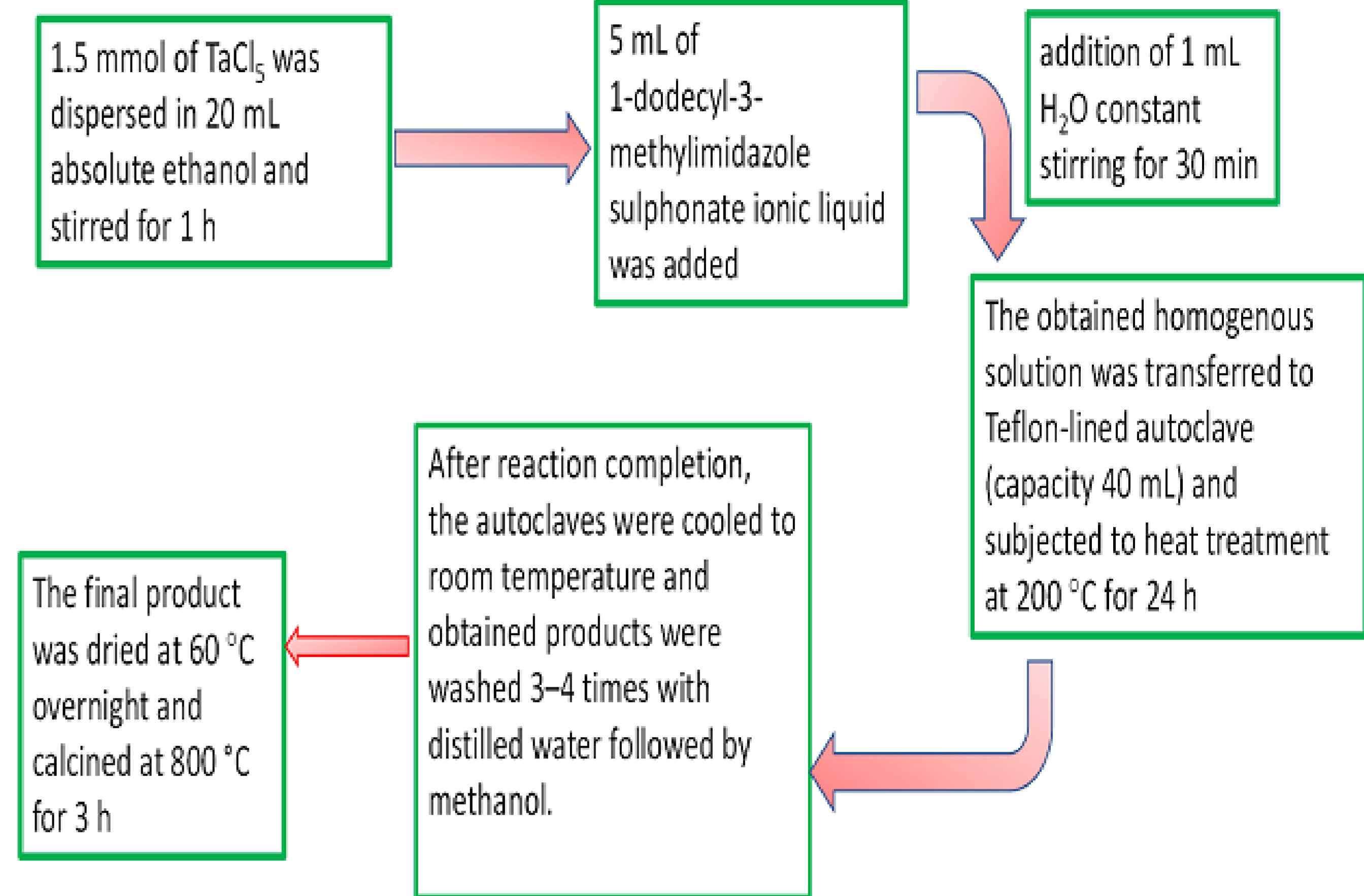


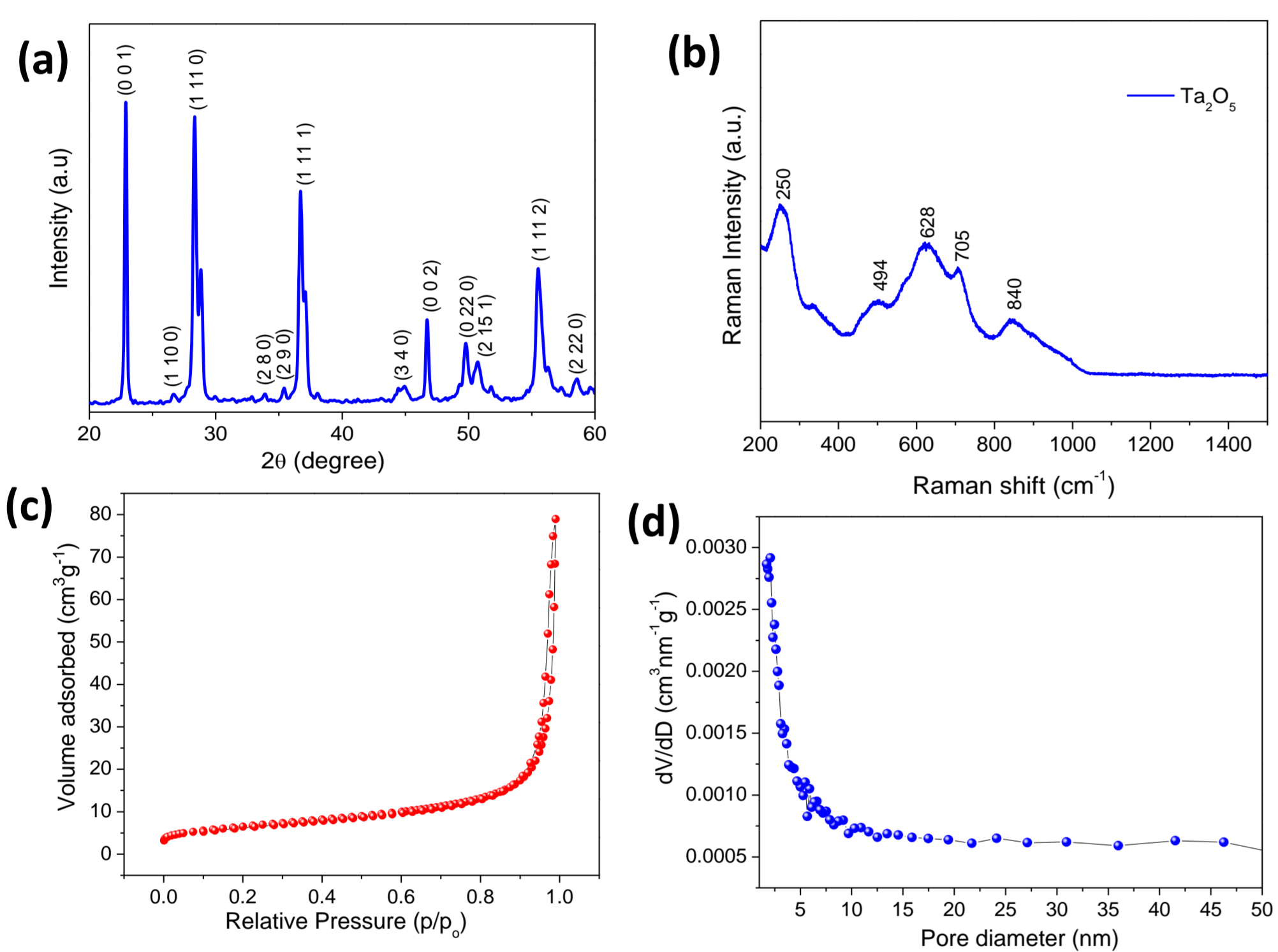
## Introduction



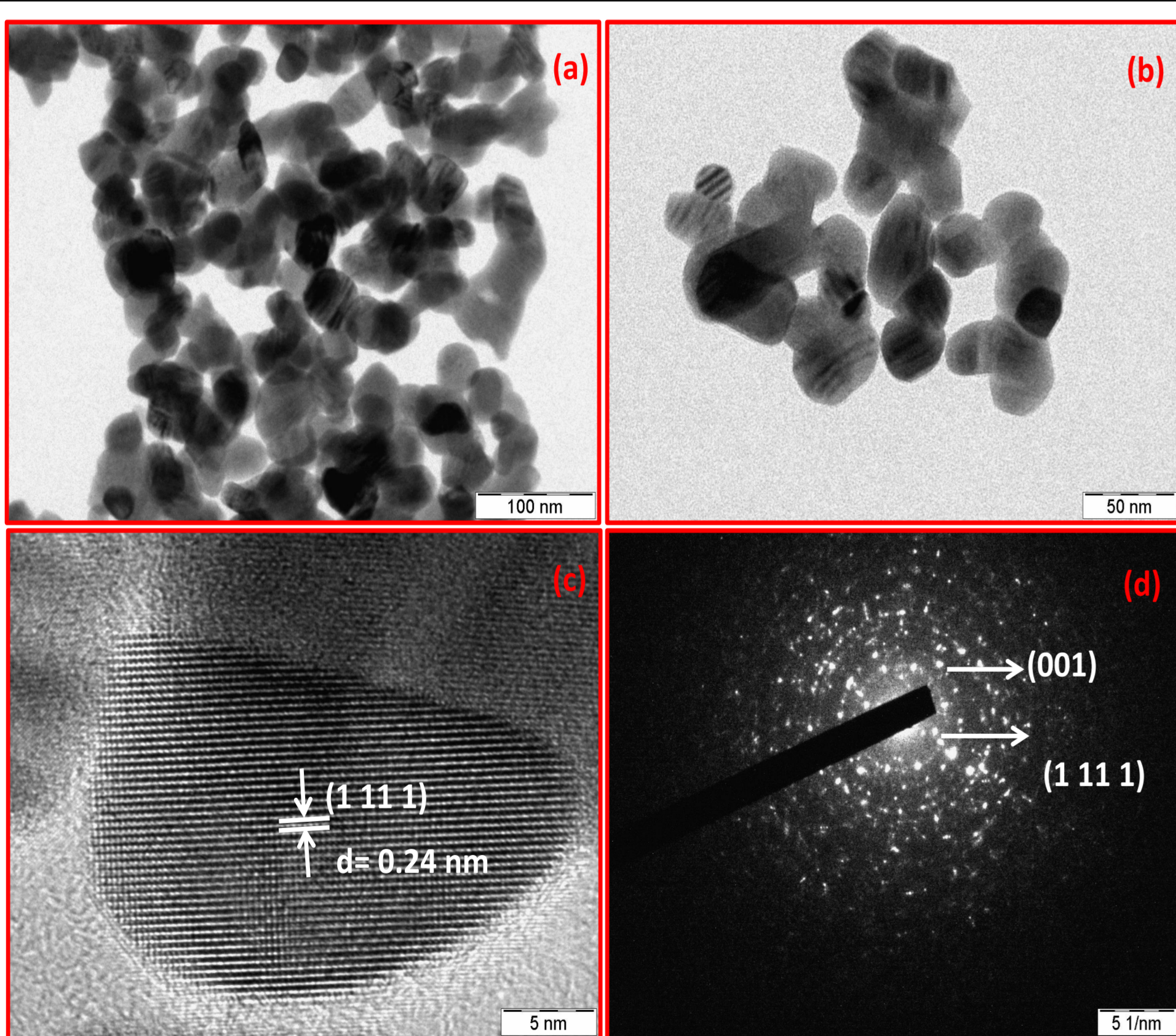
## Experimental Procedure



## Results and Discussions

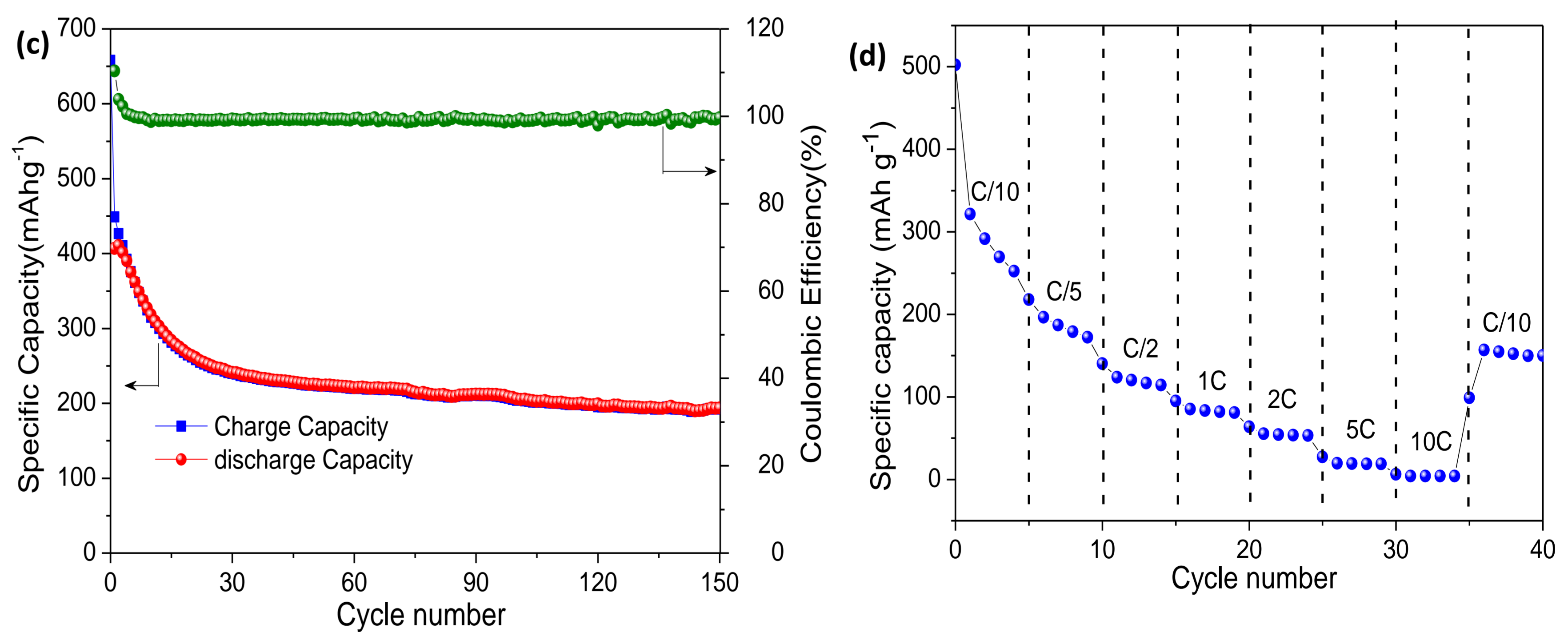
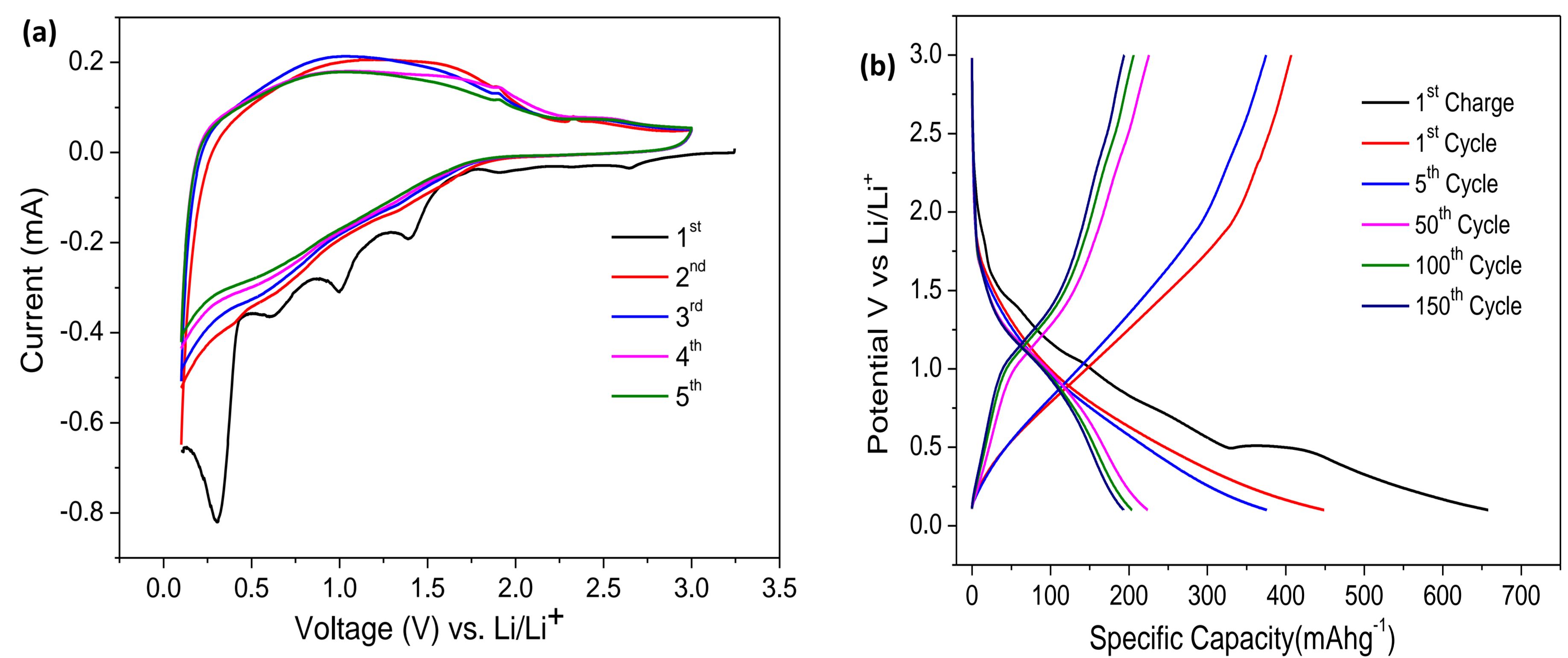


**Figure 1** PXRD pattern of Ta<sub>2</sub>O<sub>5</sub> nanoparticles (a), Raman spectrum of Ta<sub>2</sub>O<sub>5</sub> nanoparticles (b), N<sub>2</sub> adsorption – desorption isotherms of Ta<sub>2</sub>O<sub>5</sub> nanoparticles (c) and (d) Pore size distribution of Ta<sub>2</sub>O<sub>5</sub> nanoparticles



**Figure 2** (a & b) TEM images, (c) HRTEM image and (d) SAED pattern of Ta<sub>2</sub>O<sub>5</sub> nanoparticles

## Electrochemical performance of Ta<sub>2</sub>O<sub>5</sub> nanomaterial



**Figure 3.** CV curves at a scanning rate of 0.1 mVs<sup>-1</sup> in the voltage range of 0.1-3.0 V (a), Galvanostatic charge/discharge profile of Ta<sub>2</sub>O<sub>5</sub>-800 NPs at C/10 current rate (b), Cycling performance and coulombic efficiency at a current rate of C/10 and (d) Rate capability of Ta<sub>2</sub>O<sub>5</sub>-800 electrode at different current rate

## Conclusions

✓ We have successfully employed a facile ionic liquid assisted hydrothermal method to synthesize Ta<sub>2</sub>O<sub>5</sub> NPs. Ta<sub>2</sub>O<sub>5</sub> NPs undergoes conversion type electrochemical reaction with extrinsic pseudocapacitance nature. The specific capacity of the Ta<sub>2</sub>O<sub>5</sub> electrode exhibits 190 mAhg<sup>-1</sup> even after 150 cycles.

## References

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