ITSF

Indonesia Toray Science Foundation
'RESEARCH PROPOSAL'

1. **Title** : Preparation of Electrochemical Supercapacitor for Energy Storage Device from Nanomaterial Tungsten Trioxide

2. **Research Team Leader**

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3. **Research Field** : nanomaterial for electronic device
4. **Number of Researcher(s)** : 2
5. **Research Location** : ITS
6. **Time Allocation** : 10 months
7. **Research Grant** : Rp. 48,000,000,-
8. **Summary of Research Proposal (± 200 words)** :

WO_3 material is well-known to have several oxidation numbers. Therefore it is suitable for electrochemical supercapacitor application. To realize this idea, in this research we will prepare 4 electrochemical capacitors in parallel plates configuration based on WO_3 nanomaterial synthesized using sol-gel method followed with calcination at different temperatures 300, 400, 500 and 600 ^{o}C and compare the electrochemical capacitive properties of the four electrodes.

The key technologies we apply in this research are nanotechnology, especially sol-gel method, and electrochemical measurement to characterize the capacitive properties.

The results of this research are electrochemical capacitors made from WO_3 applied as energy storage devices for various applications, such as a main power source, power backup, and hybrid with other energy storage devices. This research will impact in the development of nanotechnology, especially in Indonesia which is still new and promising. The results will contribute in overcoming the global energy crisis which we face today by offering an eminent energy storage device.