

Fakulti: FAKULTI KEJURUTERAAN ELEKTRIK	
Nama Matapelajaran: Makmal Tahun 4	Semakan : 1
Kod Matapelajaran : SEE 4722	Tarikh Keluaran : 2007
	Pindaan Terakhir : 2007
	No. Prosedur : PK-UTM-FKE-(0)-10



SEE 4722

**FAKULTI KEJURUTERAAN ELEKTRIK
UNIVERSITI TEKNOLOGI MALAYSIA
KAMPUS SKUDAI
JOHOR**

**INSTITUT VOLTAN DAN ARUS TINGGI (IVAT)
STUDENT PACK (Experiment 14)**

**Effect of Ageing Time on Surface Discharge Characteristics of Polymeric
Materials under AC Voltage**

Disediakan oleh :	Disahkan oleh : Ketua Jabatan
Nama : Dr. Yanuar Z. Arief	Nama :
Tandatangan :	Tandatangan :
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Tarikh : April 2009	Tarikh :

1. LIST OF COMPONENTS AVAILABLE

a) High Voltage Construction Kits and Measuring Equipment

- High voltage test transformer
- Electrode arrangement
- High pass filter
- Oscilloscope/Picoscope
- Measuring capacitor
- Connectors and Accessories
- Protection system
- Measuring system

b) Polymeric material samples, namely high density polyethylene (HDPE), polypropylene (PP), and polyvinyl chloride (PVC).

c) Digital Microscope for physical observation (surface morphology) of polymeric materials.

2. PROBLEM-SOLVING TIME-LINE

Activities	Week 1	Week 2	Week 3	Week 4
1) Understanding/Identify/Brainstorming				
2) Design/Simulation/Experiments				
3) Hardware Development/Testing				
4) Measurements/Data Analysis				
5) Presentation/Report Writing				

3. REPORT WRITING

a) Beside the general guide specified by the Laboratory Coordinator, your report for this laboratory must also include;

- Results all of the tests.
- Photographs of the system set-up.
- Photographs of your group members during hands-on session.
- The group shall submit a write-up on the topic of *Electrical Insulation in Power Systems and Parameter which Affect the Partial Discharge on Dielectric Materials* (5 pages) to the facilitator on the **second week** of the laboratory.
- In the report, you have to consider only ageing time effect on surface discharge characteristics of polymeric materials on open-air arrangement in your analysis/discussion.

4. Bibliography

- i) Dieter Koenig, Y. Narayana Rao, “Partial Discharge in Electrical in Power Apparatuses”, VDE –Verlag GmBh, Berlin, 1993.
- ii) W. Tillar Shugg, “Handbook of Electrical and Electronic Insulating Materials”, 2nd Ed., IEEE Press, 1995.
- iii) M.S. Naidu and V. Kamaraju (2004). *High Voltage Engineering*. Mc. Graw Hill.
- iv) E. Kuffel and W.S. Zaengl. *High Voltage Engineering, Fundamentals*. Pergamon Press.
- v) Useful information related to high voltage engineering is available at <http://www.nikhef.nl/~enrichn/highvolt/notes.html>
- vi) More information on Insulator News and Market Report can be obtained at <http://www.inmr.com/>