

PHYSICS 2 ASSESSABLE PRAC 2, 2000

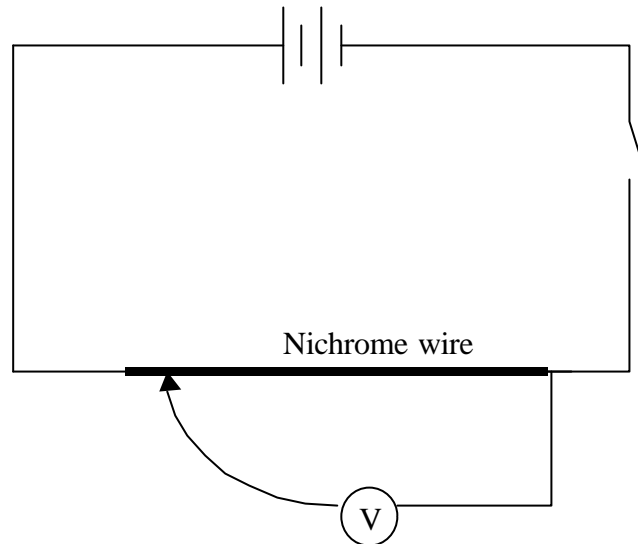
Potential Difference Along A Wire

Aim: To compare the change in electric potential along a uniform conductor, with the corresponding length of the conductor.

Conclusion:

Background: Resistivity of nichrome = $1.0 \times 10^{-6} \Omega\text{m}$

Method: The circuit was set up as shown;



A setting of 2 V was used at the power supply. The voltmeter probe wire was attached to the end of the nichrome resistance wire. The switch was pressed long enough for a reading to be obtained from the voltmeter and this reading was recorded. The voltmeter probe wire was then moved up the wire 10 cm, and then the switch was depressed and the reading off the voltmeter taken. This was repeated until the voltmeter probe wire was at the end of the nichrome resistance wire, this voltage reading was then taken. The previous steps were taken again as to get more readings so the average could be taken and the error reduced. The diameter of the wire was measured with a micrometer and the diameter was recorded.

Data:

Diameter of the nichrome wire: 0.44mm

Length of nichrome wire: 1m

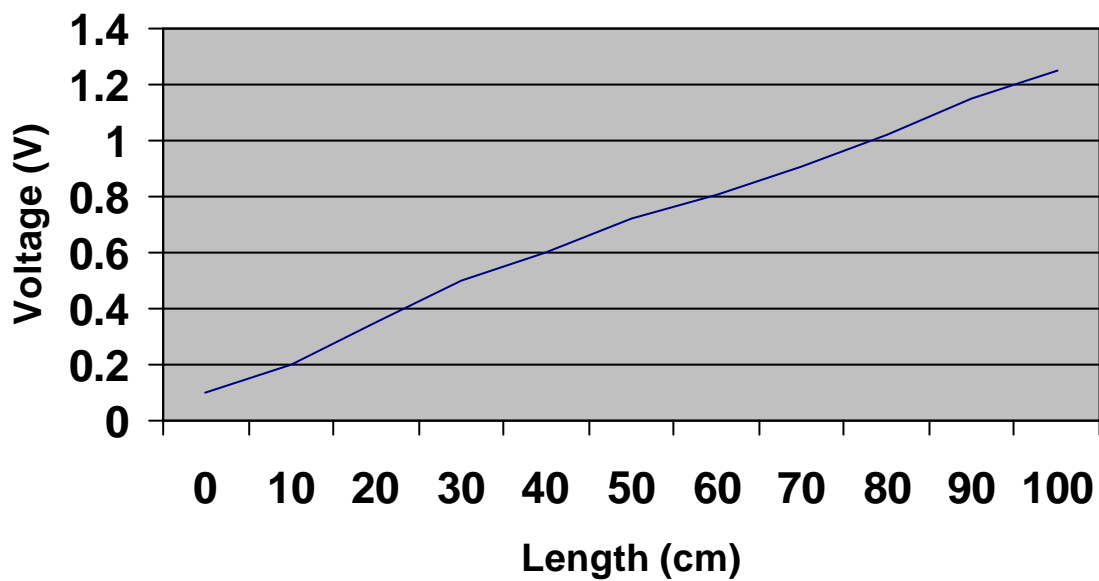
Length of wire against voltage read:

Length cm	Voltage Reading 1	Voltage Reading 2	Average Reading
0	0.1	0.1	0.1
10	0.2	0.2	0.2
20	0.35	0.35	0.35
30	0.5	0.5	0.5
40	0.6	0.6	0.6
50	0.7	0.75	0.725
60	0.8	0.82	0.81

70	0.9	0.91	0.905
80	1.0	1.05	1.025
90	1.1	1.12	1.15
100	1.2	1.3	1.25

Analysis:

Voltage / Length



Gradient = rise / run

Length(m)	0	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.00
Voltage	.1	.2	.35	.5	.6	.725	.81	.905	1.025	1.15	1.25
Gradient	N/A	2	1.75	1.7	1.5	1.45	1.35	1.29	1.28	1.27	1.25

Units for gradient are Vm^{-1}
Mean gradient = 1.484Vm^{-1}