



COMPARISON OF ELECTRICAL PROPERTIES OF NÜR-PIN PHOTODIODE AND BPW34 PIN PHOTODIODE

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Content Outline

- *Si-PIN Photodiode*
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- *Measurement Results of NÜR-PIN and BPW34 Photodiodes*
- *Conclusion*



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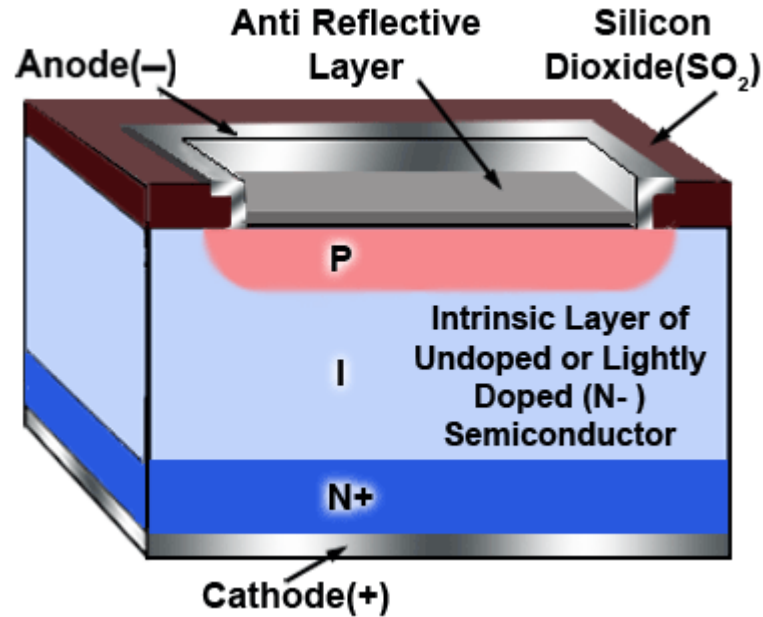
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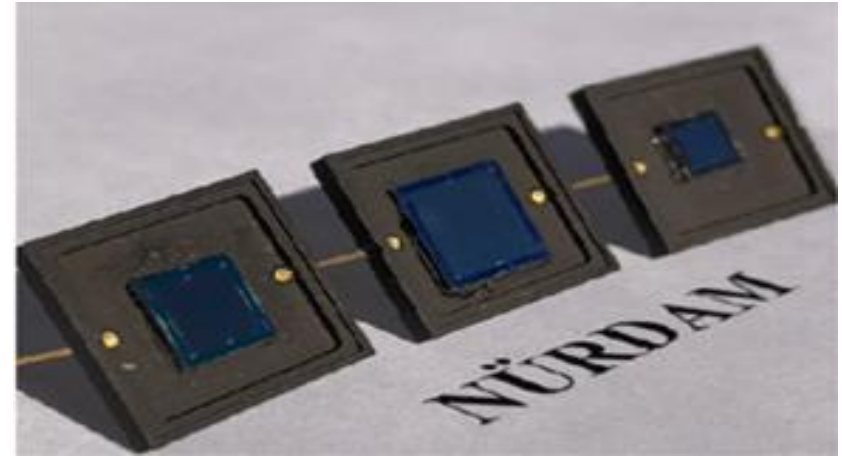
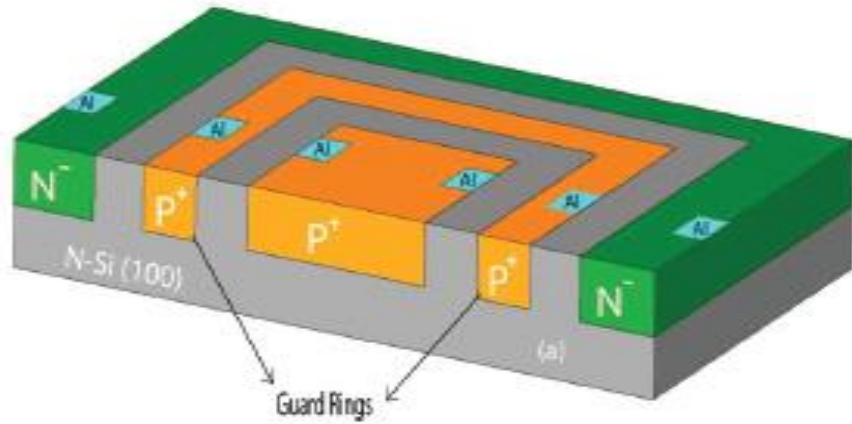


Si-PIN Photodiode



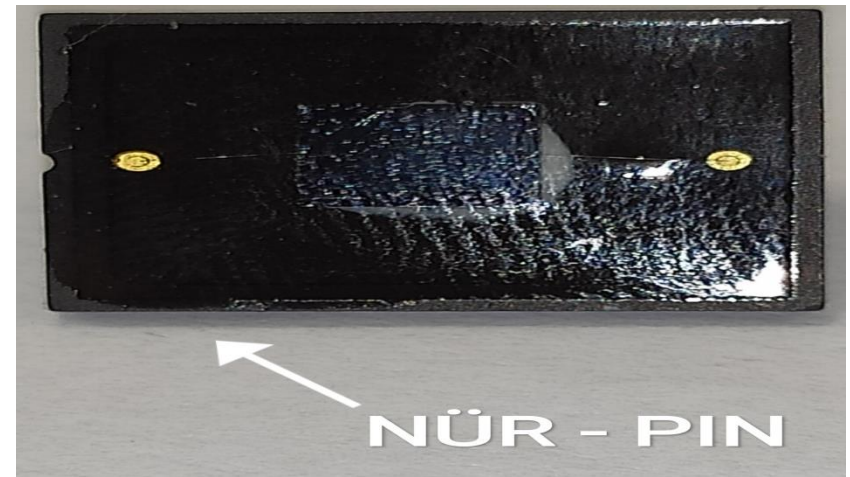
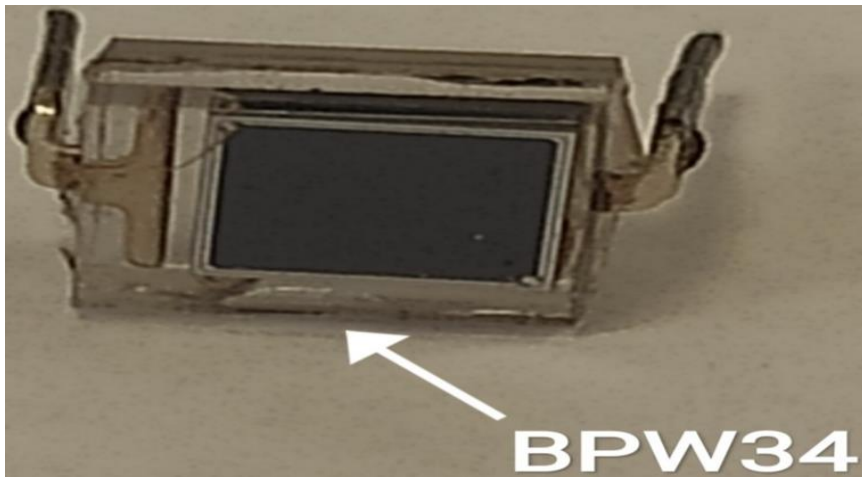
- ▶ The Si-PIN photodiodes are more efficient than PN photodiodes.
- ▶ The Si-PIN photodiodes performance is comparable with that of other detectors such as scintillation detectors, gas filled detectors, ionization chambers and thermo luminescent detectors.
- ▶ Si-PIN photodiodes have better quality and performance, very lower production cost, very small in size, faster response, better energy resolution, as well as operating at room temperature and lower voltages

Experimental Details

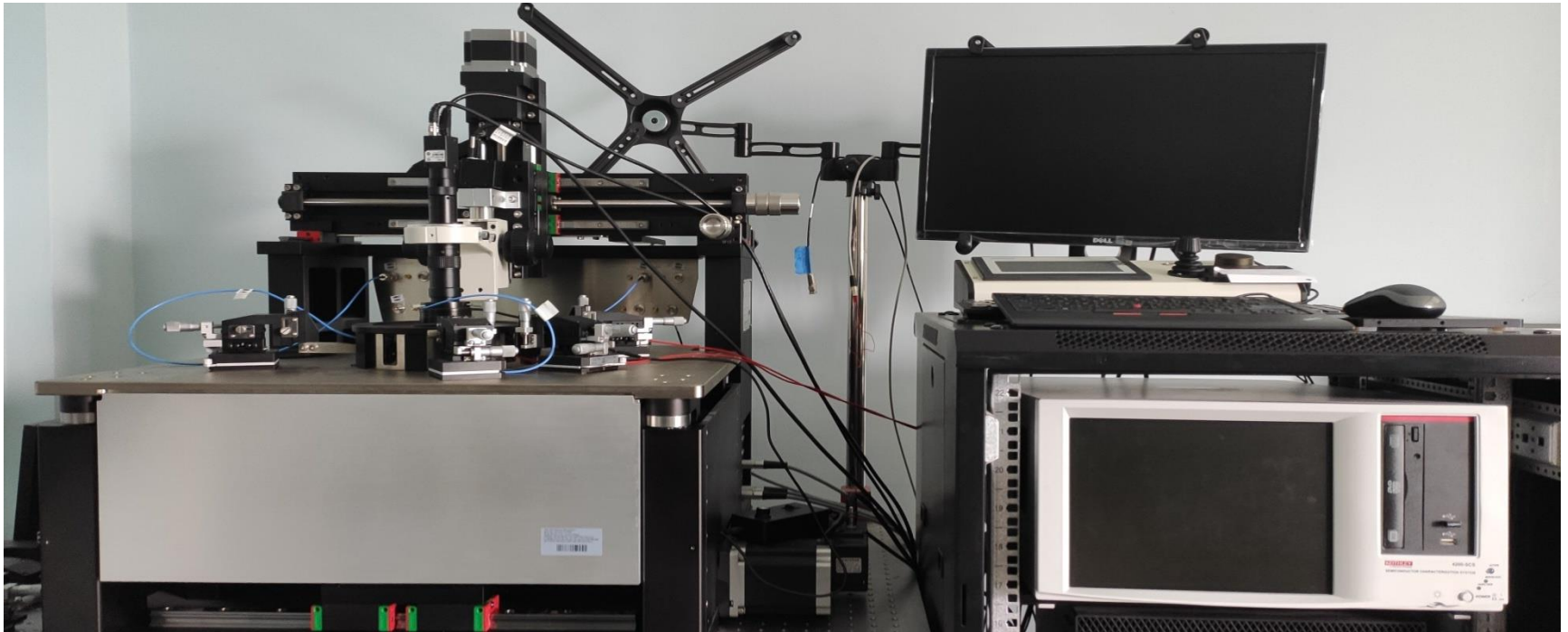


Schematic image of the fabricated NÜR-PIN photodiode

Picture of the fabricated NÜR-PIN photodiodes

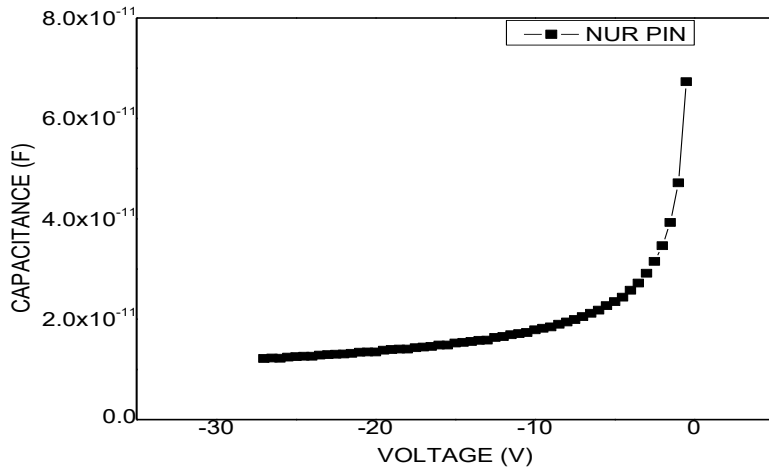


I-V and C-V Measurement of Si-PIN Photodiode

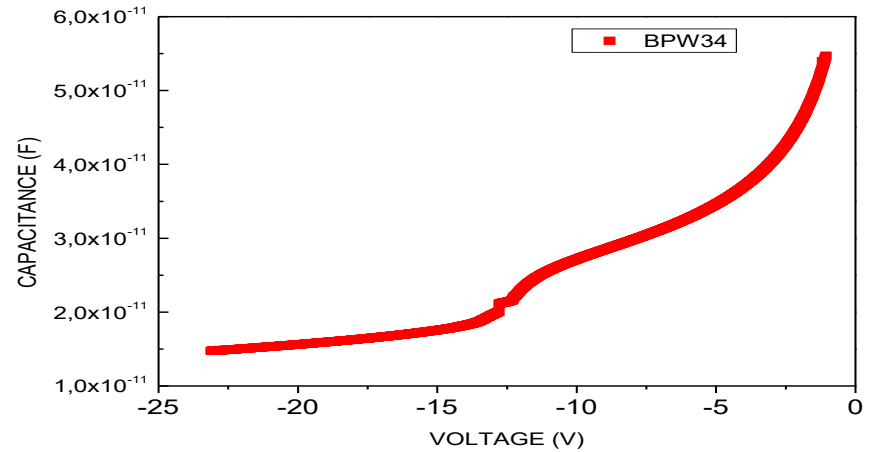


Capacitance – Voltage and Current – Voltage Measurement System (Probe Station)

Measurement Results of Si- PIN Photodiodes

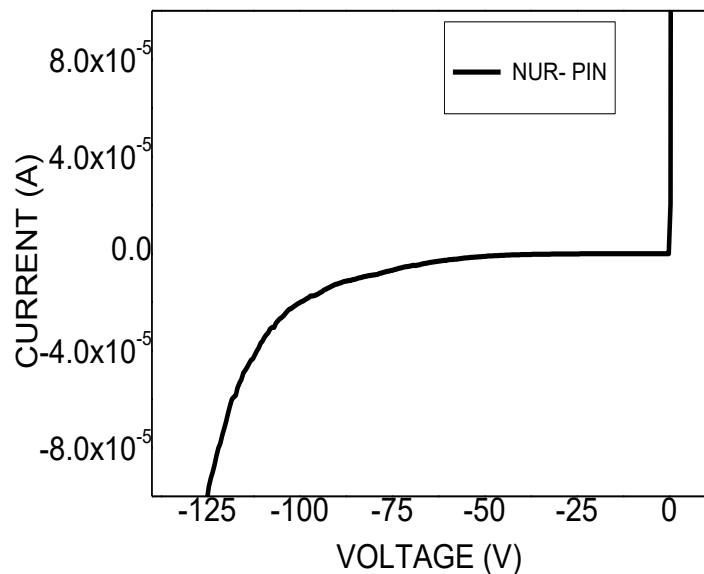


C-V measurement results of NÜR-PIN

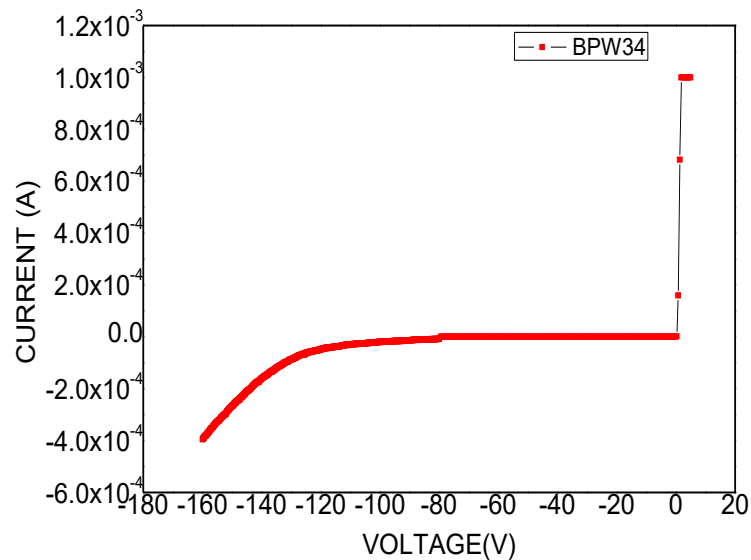


C-V measurement results of BPW 34 PIN

Measurement Results of Si- PIN Photodiode



I-V measurement results of NÜR-PIN



I-V measurement results of BPW 34 PIN

Table: Electrical Results of NÜR-PIN and BPW34 Photodiodes

PIN Photodiode	Active Area mm ²	Dark Current (I _{dc}) @ -10V	Breakdown Voltage (V _{br})	Capacitance @ -10v
NÜR-PIN	3.5 x 3.5	- 20 nA	- 84	17.7 pF
BPW34	2.65 x 2.65	-32nA	-70	27 pF

Conclusion

- ✓ Using stop channel to reduce dark current.
- ✓ Passivation layer should be used on surface of NÜR-PIN

Acknowledgements: Fabrication and initial characterization in this project is supported in part by Bolu Abant İzzet Baysal University, Bolu, Turkey, Under Contract Number Bap. 2017.03.02.1153 and The Presidency of Turkey, Presidency of Strategy and Budget under Contract Number: 2016K12-2834.



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