

## List of Tables

<i>Table</i>	<i>Title</i>	<i>page</i>
1.1	Widely used combinations of $\text{MX}_2$ with their corresponding bandgap.	13
2.1	Deposition parameters of the pre-sputtered metallic film (Mo) on various substrates.	41
4.1	Performance comparison of our $\text{MoS}_2/\text{Si}$ heterojunction-based photodetector with the $\text{MoS}_2$ -based photodetectors in literature.	78
4.2	Photocurrent, Detectivity, Barrier height, and Spectral responsivity of the $\text{MoS}_2/\text{Si}$ heterojunction at different wavelengths.	80
5.1	Performance comparison of our $\text{MoS}_2/\text{GaN}$ based photodetector with that of already reported $\text{MoS}_2$ and GaN-based photodetectors.	91

