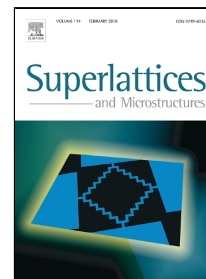


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Enhanced photoresponse of monolayer molybdenum disulfide (MoS_2) based on microcavity structure



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1 **Enhanced photoresponse of monolayer molybdenum disulfide**
2 **(MoS₂) based on microcavity structure**

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11

12 **Abstract:**

13 There is an increasing interest in using monolayer molybdenum disulfide (MoS₂) for
14 optoelectronic devices because of its inherent direct band gap characteristics. However, the
15 weak absorption of monolayer MoS₂ restricts its applications, novel concepts need to be
16 developed to address the weakness. **In this work, monolayer MoS₂ monolithically integrates**
17 **with plane microcavity structure, which is formed by the top and bottom chirped distributed**
18 **Bragg reflector (DBR), is demonstrated to improve the absorption of MoS₂.** The optical
19 **absorption** is 17-fold enhanced, reaching values over 70% at work wavelength. Moreover, the
20 monolayer MoS₂-based photodetector device with microcavity presents a significantly
21 increased photoresponse, demonstrating its promising prospects in MoS₂-based
22 optoelectronic devices.

23

24 **Keywords:** monolayer MoS₂, absorption, microcavity, photoresponse.

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