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# Hetero-structures optimized microwave absorption performance based on 2D Mo/ WS2 hybrids

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**Biography**

Junye chang currently works at the hong Kong Polytechnic University, He has significant interest in Smart Materials and Nanotechnology. He is full time post doctoral fellow at Guangdong Provincial Key Laboratory of Micro/Nano Optomechatronics Engineering, College of Mechatronics and Control Engineering, Shenzhen University.

**Abstarct**

Molybdenum disulfide (MoS2) and tungsten disulfide (WS2) has been demonstrated to be a new class of microwave absorption (MA) materials due to their high specific surface area and peculiar electronic properties. However, their limited MA capacity and bandwidth require further improvement. In our recent work, we constructed multi-heterostructures by hybridization of MoS2 or WS2 with rGO even magnetic NiO nanoparticles via a facile hydrothermal process. As a result, significantly enhanced MA absorption was observed in the hybrid heterostructure nanosheet absorbent, as reflected by the high RL and extended effective absorption bandwidth; this ould be attributed to the interfacial dielectric coupling at the welldefined hybrid interfaces constructed by the introduction of rGO or NiO. In particular, different loss mechanisms are observed in the absorbers with rGO from the dielectric loss and NiO from increased magnetic loss respectively. More remarkably, In addition, the effective bandwidth for the hybrid heterostructure nanosheet absorbers could be further adjusted from 18 GHz to a low frequency band by adding rGO or NiO. Because of their attractive microwave absorption properties as well as their features of facile synthesis route, small thickness, and lightweight, the hybrid heterostructure nanosheets are considered to be potential lightweight and wide-frequency microwave absorption materials.



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