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Direct Evidence of IR-Driven Hot Electron Transfer in Metal-Free Plasmonic $W_{18}O_{49}$/Carbon Heterostructures for Enhanced Catalytic H_2 Production

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Graphical abstract

Low-cost carbon fibers obtained via an electrospinning technique can serve as an excellent "electron mediator" to boost the transfer and separation of IR-driven hot electron in plasmonic $W_{18}O_{49}$ nanowires. This ultrafast kinetics process is completed within only ~50 fs, effectively hindering the relaxation process of hot electron. Thus, the $W_{18}O_{49}$/C heterostructure exhibits a remarkable enhancement on the H_2 production.