عنوان مقاله:

Recent Developments on I and II Series Transition Elements Doped SnO۲ Nanoparticles and its Applications For Water Remediation Process: A Review

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خلاصه مقاله:

The presence of various hazardous toxins such as Phenols, phthalates, pesticides, dyes, heavy metals, pharmaceutical waste, etc, is continuously increasing into the water bodies from different agricultural, industrial and domestic practices, which have brought the toxicity level to an alarming height. Often, these toxic compounds are quite stable in nature and the removal or degradation of these compounds is quite challenging, which further poses a significant threat to the environment. When it comes to enhance the efficiency of water purification and decontamination process, SnO۲ nanoparticles offer great potential owing to their low concentration and large surface area. Over the past few years, SnO۲ nanoparticles as a photocatalyst has garnered huge interest from the researcher community towards the photo-degradation of toxic pollutants present in the water bodies. Among various metal oxides, particularly SnO۲ has been emerged as the most versatile material for doping of different transition metals due to its plethora of applications such as photocatalysis, energy harnessing, sensors, solar cells and optoelectronic devices. The pure and doped SnO۲ has prominent significance due to its phenomenal catalytic and physicochemical properties such as chemically stable, inexpensive and non-toxic. This review explores and summarizes the progress of first and second transition metal series doping in SnO۲ for its coherent application towards the degradation of water pollutants. We have emphasized the effect of different transition metal dopants used in the growth of SnO۲ nanoparticles on the basis of their synthesis technique, source of irradiation used, nature of contaminations removed and obtained photodegradation efficiency.

کلمات کلیدی:

SnO۲ Nanoparticles, Photocatalysis, Transition Metal Doping, Wastewater treatment