Title: Photooxidation of *N*-acylhydrazones to 1,3,4-Oxadiazoles Catalyzed by Heterogeneous Visible-Light-Active Carbon Nitride Semiconductor

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Photooxidation of *N*-acylhydrazones to 1,3,4-Oxadiazoles Catalyzed by Heterogeneous Visible-Light-Active Carbon Nitride Semiconductor

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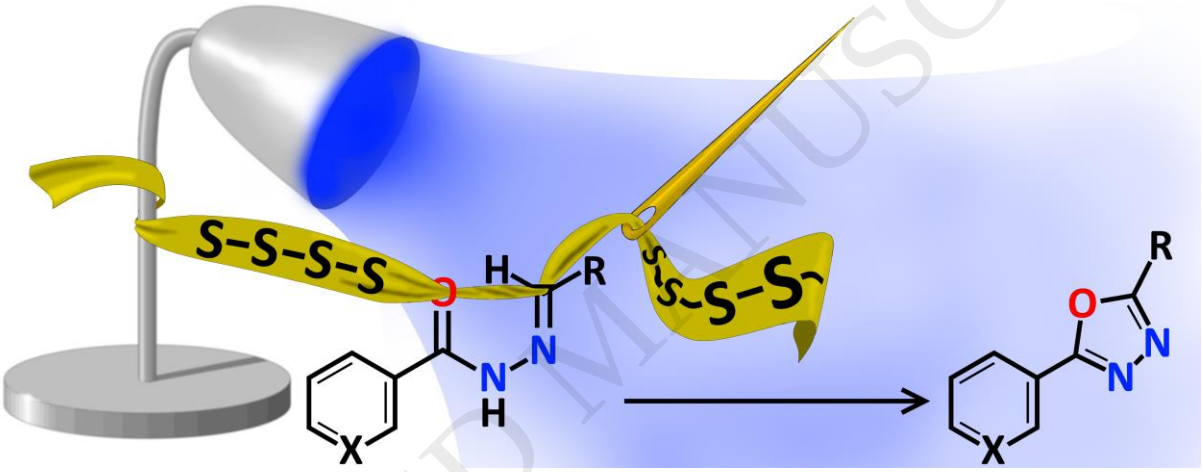
Graphical abstract



Highlights

- Potassium poly(heptazine imide) is used as a visible light photocatalyst;
- Photocatalytic synthesis of substituted 1,3,4-oxadiazoles;
- Sulfur is used as highly selective electron scavenger;
- The photocatalytic reaction proceeds through proton coupled electron transfer.

Abstract

The remarkable bioactivity of 1,3,4-oxadiazoles permanently motivates chemists to develop new milder and broader approaches to synthesize new derivatives, as well as to improve the preparation methodologies of the known compounds. Potassium poly(heptazine imide), a well crystallized representative of carbon nitrides family, shows great performance as a heterogeneous and hence recyclable photocatalyst in the visible light driven oxidative cyclization of *N*-acylhydrazones to the corresponding oxadiazoles. The proposed method uses elemental sulfur as a cheap and selective