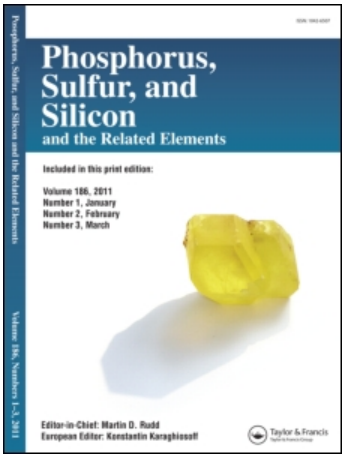

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PHOSPHORUS PENTASULFIDE AS A MILD, SELECTIVE REAGENT FOR THE REDUCTION OF SULFOXIDES TO SULFIDES

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PHOSPHORUS PENTASULFIDE AS A MILD, SELECTIVE REAGENT FOR THE REDUCTION OF SULFOXIDES TO SULFIDES

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It has been shown that phosphorus pentasulfide (P_4S_{10}) is a mild, effective reagent for the reduction of sulfoxides to sulfides and that this conversion can be achieved selectively in the presence of other reactive groups such as ketone, ester, amide, nitro and halogen. This reagent can be used in similar fashion for the efficient reduction of sulfilimines (in both the N-p-toluenesulfonyl and free NH forms). Phosphorus pentasulfide also appears to be a promising reagent for reducing selenoxides but is ineffective in reducing sulfones, sulfinates, or sulfites. The mechanistic evidence presented indicates a probable four-centre (Wittig-like) intermediate or transition-state for the reduction by P_4S_{10}.

$$R_2S{=}X \xrightarrow{P_4S_{10}} R_2S$$

(X=O,NH,NTos)

$$R_2SeO \xrightarrow{P_4S_{10}} R_2Se$$