Synthesis of Aryl Disulfides by Bismuth(III) Triflate-mediated Coupling of Thiols

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Abstract: Disulfides are used in many organic procedures and play a very important role as vulcanizing agents and linkages for controlled drug delivery.As far as we know, no triflate-catalysed coupling of thiols has yet been reported. Metal triflates are classified as very selective catalysts. In view of previous reports on the successful use of Lewis acids in many organic procedures, the aim of this work was to check the activity of those catalysts in the coupling of thiols. A new method has been disovered to obtain symmetric disulfides with yields of up to 97% under mild conditions within a short time. Bismuth(III) triflate demonstrates the highest catalytic activity among all of the tested triflates. This versatile and highly efficient method opens up the way to synthesize aryl disulfides, that play a very important role as further reagents in many organic procedures. Mild conditions, low catalyst loading and the simplicity of the experimental technique are favourable features of this reaction.

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