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5-Aminothiazoles: New Fluorescent Molecules Showing Multichromism

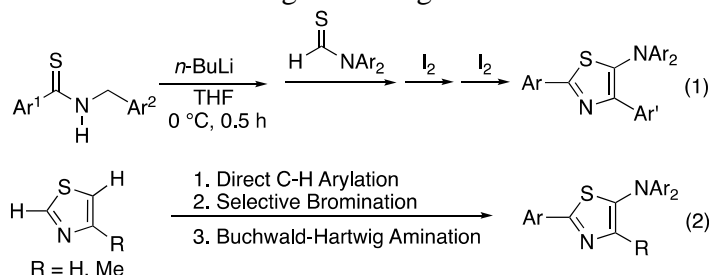
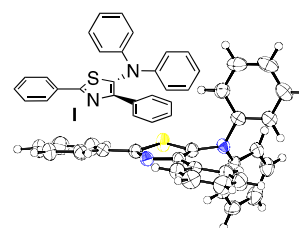
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Increasing attention has been paid to fluorescent molecules because of their wide applicability to organic electronics, chemo- and biosensors, and probes. Most of their core skeletons consist of rigid and planar ring-fused aromatic units. In contrast, we have recently developed 5-N-arylaminothiazoles **I** as new fluorescent molecules.^[1-5] Despite the fact that they adopt highly deviated structures, they show fluorescence, and their emission wavelengths depending on the substituents are in the range from 450 to 700 nm. Photophysical properties have suggested the molecules excited through the intramolecular charge transfer process. We have now developed two types of synthetic methods for them. One is the combination of thioformamides and secondary thioamides (eq 1).^[3] Thioamide dianions generated from thioamides reacted with thioformamides followed by the oxidation to give the corresponding 5-N-arylaminothiazoles. Alternatively, transition metal-catalyzed three-step functionalization of unsubstituted thiazole gives a range of 5-aminothiazoles (eq 2).^[6]



The details of these reactions and the properties of the resulting thiazoles are presented.

References:

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- (6) T. Murai, K. Yamaguchi, T. Hayano, T. Maruyama, K. Kawai, H. Kawakami, A. Yashita, *Organometallics* **2017**, *36*, 2552-2558.