Visible-Light-Mediated [4+2] Annulation of N-Cyclobutylanilines on Self-Doped Titania

**Significance:** A self-doped Ti$^{3+}$@TiO$_2$ catalyst was prepared as shown in equation 1. The [4+2] annulation of N-cyclobutylanilines with alkynes took place in the presence of Ti$^{3+}$@TiO$_2$ under visible-light irradiation in air to give the corresponding annulation products 1a–d in up to 85% yield (eq. 2; 15 examples).

**Comment:** The catalyst was recovered by centrifugation, washed with t-BuOH, and reused four times for the formation of 1a (fifth run: 79% yield). When the reaction of 4-t-butyl-N-cyclobutylaniline and prop-1-yn-1-ylbenzene was carried out in the presence of Ti$^{3+}$@TiO$_2$ (10 mol%) or rose bengal (5 mol%) for 13 h, product 2 was obtained in yields of 43% and 19%, respectively (eq. 3).