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Design and fabrication of low-loading palladium nano particles on polyaniline (nano Pd@PANI): An effective catalyst for Suzuki cross-coupling with high TON

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Abstract: By using H₂O₂ as clean oxidant instead of air in previous fabrication process, a new nano palladium catalyst supported on polyaniline (nano Pd@PANI) with low Pd loading can be smoothly achieved by oxidative polymerization of the aniline with a reduced amount of PdCl₂ (currently 0.12% Pd only *vs.* previously 2.5% Pd). Although this new catalyst contains much less amount of Pd in comparison with the old nano Pd@PANI catalyst (currently only 0.75% Pd *vs.* previously 10.0% Pd), it is still found to be an effective catalyst for the Suzuki coupling of aryl halides and aryl boric acids, affording biphenyl products in excellent yields with dramatically enhanced turnover numbers (TON, 4.7×10^3 *vs.* 880).

Keywords: aniline; nano Pd catalyst; palladium; polyaniline; Suzuki cross-coupling.

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