The first step involves cross-coupling of a diaryliodonium salt with the organoboron compound to give the product of phenylation and aryl iodide. Aryl iodide reacts in the second step. The intermediate formation of aryl iodide was confirmed by GLC.

The catalytic cycle of each of the steps involves oxidative addition, transmetallation, and reductive elimination.[9]

1 mmol of $(m\text{-}NO_2C_6H_4)_2IHSO_4$, 0.55 mmol of $Ph_4BNa$, 2 mmol of $Na_2CO_3$, 5 mL of $H_2O$, and 0.1 mL of a 0.1 *M* aqueous solution (0.01 mmol) of $PdCl_2$ were stirred for 1 h at 80 °C under argon, cooled to ambient temperature, and extracted with ether. The ethereal extracts were washed with water and dried with $Na_2SO_4$. Removal of the solvent gave 0.382 g (96 %) of *m*-nitrodiphenyl, m.p. 62 °C (from ethanol).[10]

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# Tris(*p*-nitrophenyl)(triphenylphosphinegold)methane

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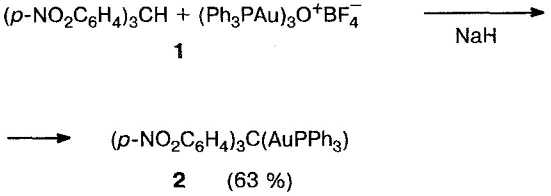
A gold derivative of the triphenylmethane series was prepared for the first time. The treatment of tris(*p*-nitrophenylmethane) (**1**) with tris(phosphinegold)oxonium tetrafluoroborate in the presence of NaH in an argon atmosphere gave tris(*p*-nitrophenyl)(triphenylphosphinegold)methane (**2**) as a dark-blue crystalline solid with a dec. point above 170 °C that is relatively stable in the solid state at negative temperatures. Found (%): C, 53.27; H, 3.20; N, 4.83. $C_{37}H_{27}AuN_3O_6P$. Calculated (%): C, 53.05; H, 3.25; N, 5.01. UV (THF), $\lambda_{max}$/nm: 731, 523. IR (vaseline oil), $\nu$/cm$^{-1}$: 1530 $\nu_{as}(NO_2)$; 1348, 1262, $\nu_s(NO_2)$.



$$\underset{\mathbf{1}}{(p\text{-}NO_2C_6H_4)_3CH} + (Ph_3PAu)_3O^+BF_4^- \xrightarrow[\text{NaH}]{\text{abs. THF}} \longrightarrow \underset{\mathbf{2}\ \ (63\ \%)}{(p\text{-}NO_2C_6H_4)_3C(AuPPh_3)}$$

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The UV spectra of compound **2** in $CH_2Cl_2$, THF, and DMSO are very similar to those of the potassium salt of **1** in the same solvents. The similarity is also observed when one compares the $\nu_{as}(NO_2)$ and $\nu_s(NO_2)$ regions of their IR spectra recorded both in the solid state and in solutions.

Electrochemical measurements of the compound under study and the potassium salt of **1** at a Pt electrode (MeCN, $Et_4NBF_4$, Ag/AgCl/KCl sat.) showed that the $(p\text{-}NO_2C_6H_4)_3C^-$ anion is reversibly oxidized in the anode area ($E_p^{Ox} = 0.46$ V), and the $AuPPh_3^+$ cation is irreversibly reduced in the cathode area ($E_p^{Red} = -1.21$ V) with deposition of metallic gold on the surface of the Pt electrode.

The data obtained indicate that, unlike other covalent alkyl and aryl gold derivatives, compound **2** has an ionic structure both in the solid state and in solutions, similarly to the previously studied alkali metal salts of **1** (see Refs. 1 and 2).

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