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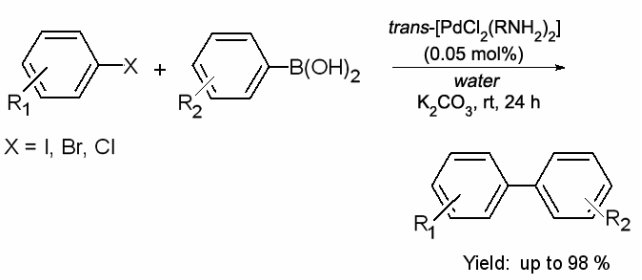
## CONTENTS

**1545 Primary amine-based palladium(II) complexes as catalysts for Suzuki-Miyaura reaction: Experimental and theoretical investigations on the effects of substituents on nitrogen atom**

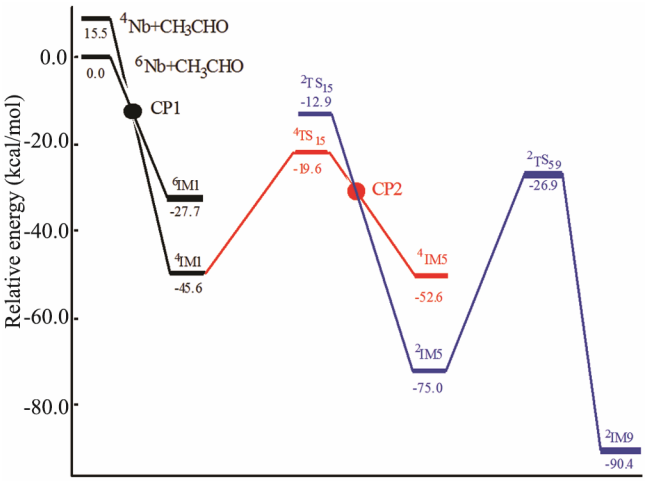
Catalytic activities of eight primary amine-based palladium complexes are explored for Suzuki-Miyaura reactions of aryl halides with arylboronic acids in water at room temperature. The observed catalytic trend correlates well with the DFT-based reactivity descriptors such as chemical hardness, chemical potential and electrophilicity index of the ligands.




**Archana Tairai, Pradip K Bhattacharyya, Rahul Kar & Pankaj Das***

**1553 A DFT study on the mechanism of the gas phase reaction of niobium with acetaldehyde**

The spin-forbidden reaction, $^{6}Nb+CH_3CHO \rightarrow CP1 \rightarrow {}^{4}IM1 \rightarrow {}^{4}TS_{15} \rightarrow CP2 \rightarrow {}^{2}IM5 \rightarrow {}^{2}TS_{59} \rightarrow {}^{2}IM9$, is found to be energetically most favorable. The identified reaction mechanisms suggest sextet–quartet and quartet–doublet surface crossings. The crossing region has been determined approximately.

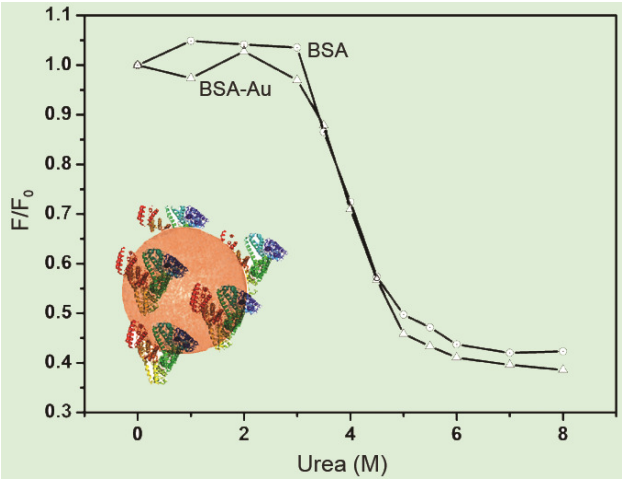



**Yong Wang & Gui-hua Chen***

## Notes

**1561 Fluorescence and CD studies of protein denaturation in the presence of sub-picomolar gold nanoparticles**

Sub-nanomolar concentrations of gold nanoparticles are found to have some visible effects on the conformation of BSA. A small but definite enhancement in the trp emission in presence of sub-picomolar gold nanoparticles is observed.




**K Ojha, P K Chowdhury & A K Ganguli***

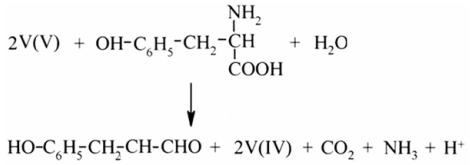
**1567 Flow injection preconcentration system using a new functionalized resin for determination of cadmium(II) by flame atomic absorption spectroscopy**

A rapid, sensitive and selective online preconcentration procedure for the determination of cadmium(II) in industrial water samples by flow injection technique with flame atomic absorption spectroscopy as a detection method is reported. The method is linear over the concentration range of 0–120 µg $L^{-1}$ Cd(II). The limits of detection are 1.038 and 0.57 µg $L^{-1}$ for 60 s and 120 s sorption times respectively. The precision for 5 replicate measurements are 1.68 and 1.12 for the determination of 20 and 50 µg $L^{-1}$ Cd(II) respectively.

**Reena Saxena* & Suneeti Singh**

In aqueous hydrochloric and ethanoic acid media, vanadium(V) is reduced to vanadium(IV) and tyrosine is oxidized to 4-hydroxyphenyl acetaldehyde. The reaction is first order with respect to vanadium(V) and less than unit order with respect to tyrosine concentrations. The reaction follows the rate law:

$$\text{Rate} = -d[VO_2^+]/dt = \frac{k K_1 K_2 \left[VO_2^+\right] \left[\text{tyrosine}\right] \left[H^+\right]}{1 + K_1[H^+] + K_1 K_2 \left[\text{tyrosine}\right] \left[H^+\right]}$$





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