



signals for Bu<sup>t</sup> protons ( $\delta$  1.3 and 1.45). A double set of signals is also observed for complex (5) (R = Pr<sup>i</sup>, R' = H). We have therefore investigated complex (4) by single crystal X-ray structure analysis.

*Crystal data:* C<sub>40</sub>H<sub>80</sub>Cl<sub>4</sub>N<sub>8</sub>Rh<sub>4</sub>, monoclinic, space group P2<sub>1</sub>/n,  $a = 15.069(3)$ ,  $b = 11.587(3)$ ,  $c = 15.114(3)$  Å,  $\beta = 96.91(2)^\circ$ ,  $Z = 2$ ,  $M = 1226.7$ ,  $D_c = 1.56$  g cm<sup>-3</sup>. Least squares refinement, based on 3848 observed reflections (4631 symmetry independent) measured on a Syntex P2<sub>1</sub> diffractometer and unit weights converged to  $R = 0.0368$  ( $R_w = 0.038$ ).<sup>7†</sup> The molecular structure is shown in Figure 1. The tetranuclear complex consists of two enantiomeric halves connected *via* chloro-bridges. Each half carries one normal chelating dad ligand, whereas the other dad has undergone oxidative addition with concomitant rupture of the central C–C bond. While in many low valent metal dad complexes the central C–C bond is shortened because of back bonding (down to 1.36 Å)<sup>1</sup> rhodium shows another way to get rid of high electron density. To our knowledge this is the first example of C–C bond cleavage in a simple, non-strained diene system; the bond cleavage of strained ring systems by rhodium is of course well established.<sup>8</sup>

Perhaps the most interesting feature of the reaction is the easy formation of bridging azomethine groups; this is in contrast to the low stability usually observed for known formyl

complexes.<sup>9</sup> The reaction invokes the possibility of another type of hydroformylation reaction.

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† The atomic co-ordinates for this work are available on request from the Director of the Cambridge Crystallographic Data Centre, University Chemical Laboratory, Lensfield Road, Cambridge CB2 1EW. Any request should be accompanied by the full literature citation for this communication.