Asymmetric Transfer Hydrogenation of Ketones Catalyzed by Enantiopure Osmium(II) Pybox Complexes

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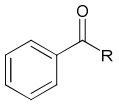
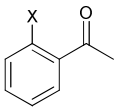
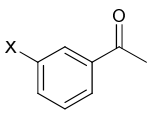
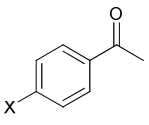
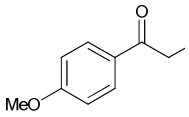
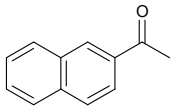
Catalytic Asymmetric Transfer Hydrogenation of Ketones

The catalysts **1a**–**4a** were screened in the catalytic reduction of various aryl ketones to the corresponding secondary alcohols under optimized conditions (Table 1).

Table 1. Transfer Hydrogenation of Ketones Catalysed by (*S*,*S*)-^{i}Pr-pybox Complexes Under Optimised Conditions[a]

	Ketone		Catalyst	Conv. (%)	*e.e.* (%)
1		R = Me	**1a**	98	94 (*R*)
2			**2a**	99	90 (*R*)
3			**3a**	99	91(*R*)
4			**4a**	98	92 (*R*)
5		R = Et	**1a**	97	91 (*R*)
6			**2a**	98	92 (*R*)
7			**3a**	99	92 (*R*)
8			**4a**	98	94 (*R*)
9		X = OMe	**1a**	99	74 (*S*)
10			**2a**	99	74 (*S*)
11			**3a**	99	72 (*S*)
12			**4a**	98	71 (*S*)
13		X = Br	**1a**	98	57 (*S*)
14			**2a**	99	55 (*S*)
15			**3a**	99	54 (*S*)
16			**4a**	99	53 (*S*)
16		X = OMe	**1a**	97	79 (*R*)
17			**2a**	97	74 (*R*)
18			**3a**	97	79 (*R*)
18			**4a**	97	80 (*R*)

20		X = Br	**1a**	99	92 (*R*)
21			**2a**	99	91 (*R*)
22			**3a**	99	90 (*R*)
23			**4a**	98	88 (*R*)
24		X = OMe	**1a**	98	93 (*R*)
25			**2a**	98	90 (*R*)
26			**3a**	98	93 (*R*)
27			**4a**	98	92 (*R*)
28		X = Br	**1a**	97	72 (*R*)
29			**2a**	97	73 (*R*)
30			**3a**	97	71 (*R*)
31			**4a**	97	68 (*R*)
32			**1a**	97	94 (*R*)
33			**2a**	96	93.5 (*R*)
34			**3a**	96	94 (*R*)
35			**4a**	96	93(*R*)
36			**1a**	99	54 (*S*)
37			**2a**	99	54 (*S*)
38			**3a**	99	55 (*S*)
39			**4a**	99	54 (*S*)

[a] Reactions were carried out at 82 ºC during 60 min, using 5 mmol of ketone and 75 mL of 2-propanol, 0.6 mol % catalyst and KO^tBu (acetophenone/catalyst/ KO^tBu 500:3:60).