Electronic Supplementary Material (ESI) for Dalton Transactions
This journal is © The Royal Society of Chemistry 2012

Supplementary Information:

Table SI-1: Overview of the fragments observed in the EI-MS (70 eV) spectra of $[RE(DPDMG)_3]$ RE = Sc (**1**), Er (**2**), Y (**3**), Gd and Dy[1-2]

Fragment	$[RE(DPDMG)_3]$							
	Sc (**1**)		Er (**2**)		Y (**3**)		Dy	
	mass (m/z)	rel. int. (%)	mass (m/z)	rel. int. (%)	mass (m/z)	rel. int. (%)	mass (m/z)	rel. int. (%)
$[RE(L)_3]^{+\bullet}$ $(C_{27}H_{60}N_9RE)$	555	29	676	51	599	34	674	49
$[(L)_2RE\{(^iPrN)_2C\}]^{+\bullet}$ $(C_{25}H_{54}N_8RE)$	512	1	632	4	555	3	630	4
$[RE(L)_2]^{+\bullet}$ $(C_{18}H_{40}N_6RE)$	385	100	506	100	429	100	504	100
$[(L)RE\{(^iPrN)_2CNCH_2\}]^{+\bullet}$ $(C_{17}H_{36}N_6RE)$	369	4	490	9	413	10	488	9
$[(L)RE\{(^iPrN)_2C\}]^{+\bullet}$ $(C_{16}H_{34}N_5RE)$	341	73	341	73	385	46	460	48
$[(L)REN(^iPr)CN]^{+\bullet}$ $(C_{13}H_{27}N_5RE)$	300	6	462	45	343	12	417	14
$[(L)REN(H)CN]^{+\bullet}$ $(C_{10}H_{21}N_5RE)$	257	10	377	20	301	13	376	25
$[(L)RENH]^{+\bullet}$ $(C_9H_{21}N_4RE)$	230	2	351	3	274	1	349	2
$[(L)RE]^{+\bullet}$ $(C_9H_{20}N_3RE)$	215	n.d.	336	4	259	n.d.	334	n.d.
$[\{(^iPrN)_2CNCH_2\}RENH]^{+\bullet}$ $(C_8H_{17}N_4RE)$	214	12	335	20	258	23	333	32
$[RE\{(^iPrN)_2C\}]^{+\bullet}$ $(C_7H_{14}N_2RE)$	n.d.	n.d.	n.d.	n.d.	215	3	290	8
$[REN^iPr]^{+\bullet}$ (C_3H_7NRE)	102	1	223	1	146	2	220	2

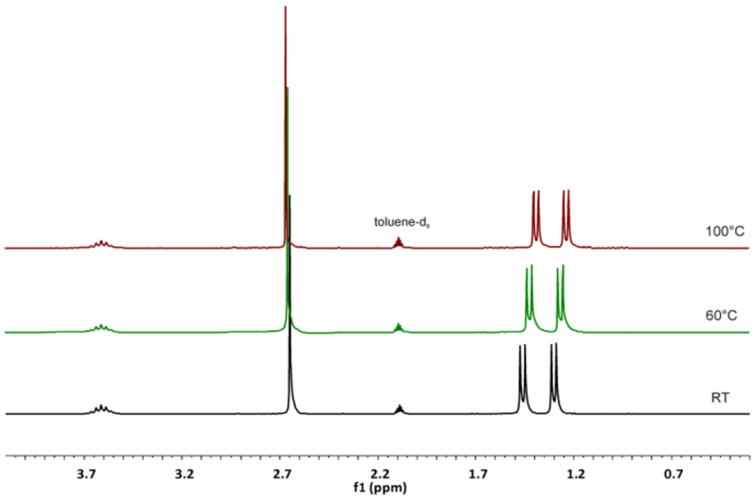
L = DPDMG = $\{(^iPrN)_2CNMe_2\}$; * the peak intensity varies from 15 to 1 % in the recorded spectra; n.d. = not detected

[1] A. P. Milanov, R. A. Fischer and A. Devi, *Inorg. Chem.*, 2008, **47**, 11405-11416.

[2] A. P. Milanov, T. Thiede, A. Devi and R. A. Fischer, *J. Am. Chem. Soc.*, 2009, **131**, 17062-17063.

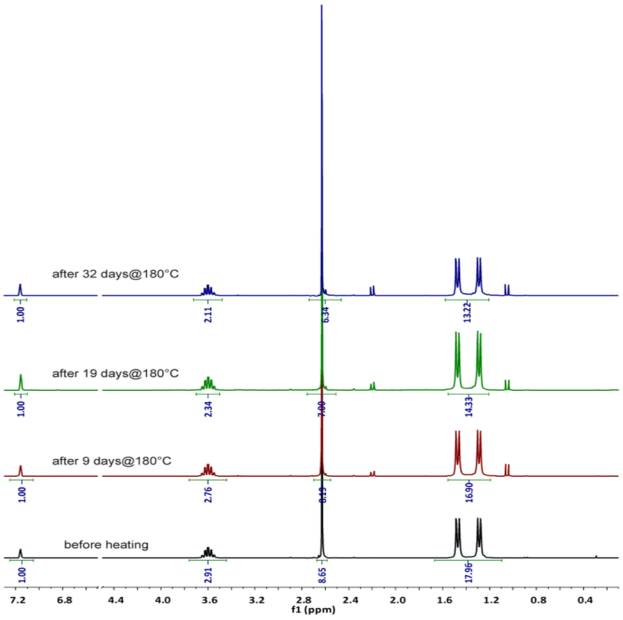
This journal is © The Royal Society of Chemistry 2012

Fig. S1: Temperature dependent NMR data of [Sc(DPDMG)$_3$] **1**



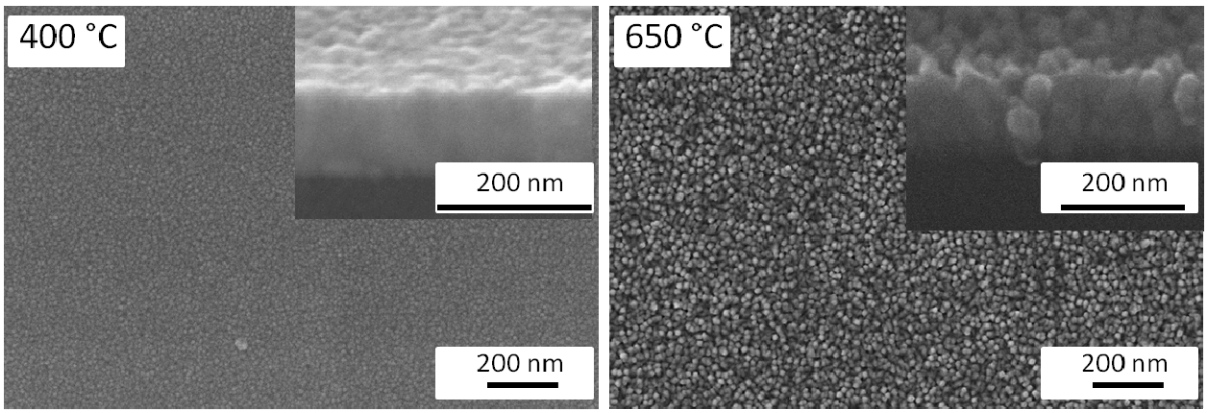
This journal is © The Royal Society of Chemistry 2012

Fig. S2: Temperature dependent NMR decomposition data of [Y(DPDMG)$_3$] **3**



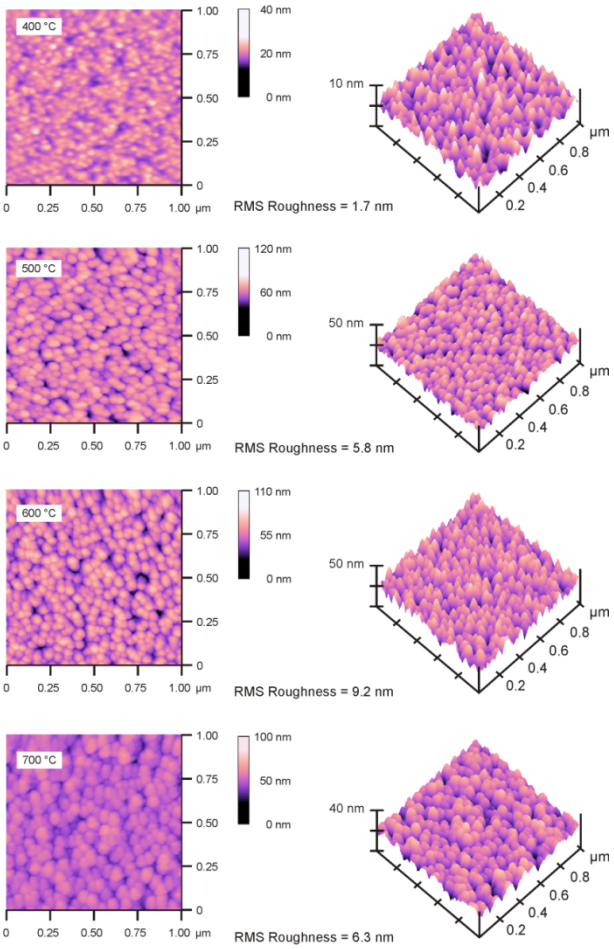
This journal is © The Royal Society of Chemistry 2012

Fig. S3: SEM images of Er_2O_3 thin films deposited by MOCVD at 400 °C and 650 °C on Si(100) substrates using [Er(DPDMG)$_3$] **2** as precursor.



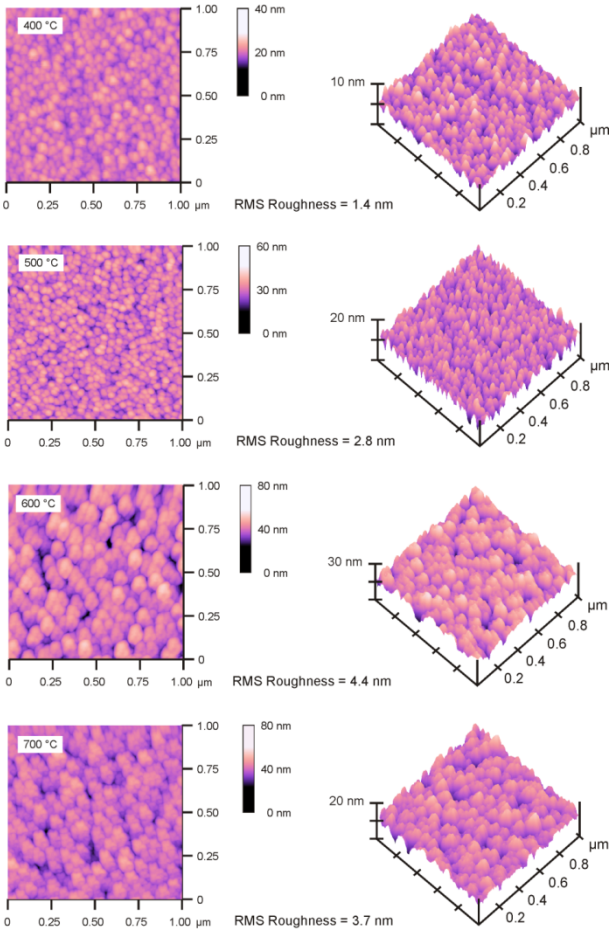
This journal is © The Royal Society of Chemistry 2012

Fig. S4 AFM micrographs of Sc_2O_3 films deposited on Si(100) substrates at 400–700 °C using [Sc(DPDMG)$_3$] **1** as precursor.



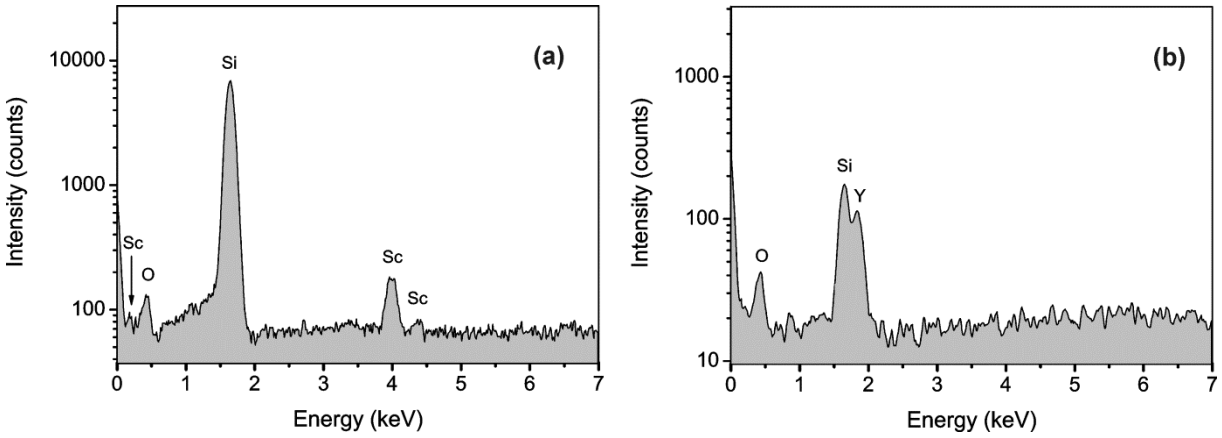
This journal is © The Royal Society of Chemistry 2012

Fig. S5 AFM micrographs of Y_2O_3 films deposited on Si(100) substrates at 400–700 °C using [Y(DPDMG)$_3$] **3** as precursor.



This journal is © The Royal Society of Chemistry 2012

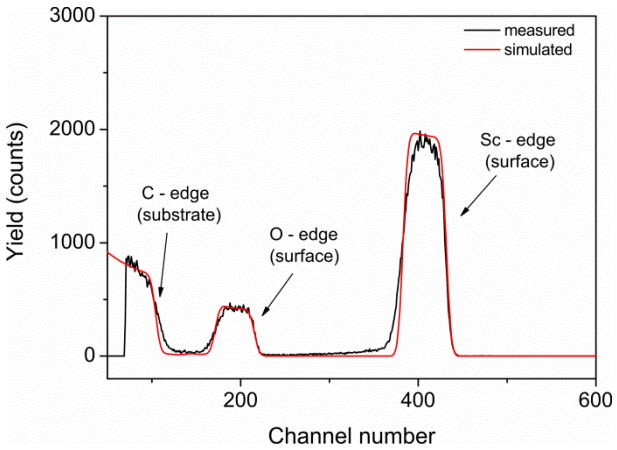
Fig. S6 EDX spectra of (a) Sc_2O_3 and (b) Y_2O_3 thin film deposited at 500 °C on Si(100) substrates using [Sc(DPDMG)$_3$] **1** and [Y(DPDMG)$_3$] **3** respectively.



This journal is © The Royal Society of Chemistry 2012

Fig. S7 RBS spectra of (a) Sc_2O_3 and (b) Y_2O_3 thin films deposited at 400 °C on glassy carbon substrates using precursors [Sc(DPDMG)$_3$] **1** and [Y(DPDMG)$_3$] **3**, respectively.

(a)



(b)

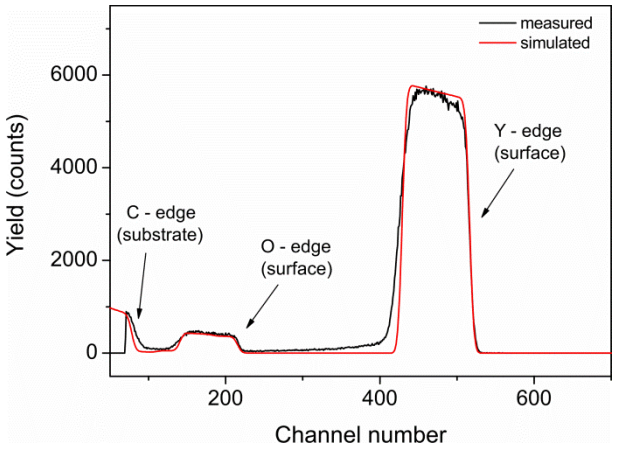


Fig. S8 (left) Background subtracted NRA (d, p-gamma) spectrum of Y_2O_3 deposited at 500 °C using **G1** ($2H^+$ beam, 0.98 MeV) (right) Summary of NRA (d, p-gamma) spectra of Y_2O_3 (measured), pure Si(100) (background), Kapton and Y_2O_3 (background subtracted). Kapton ($C_{22}H_{10}O_4N_2$) was used as standard.