Index

Sec	ction 1	
Introduction		9
Sac	ction 2	
Exi	perimental methods	13
1	Bulk magnetic characterisation	10
1	1.1 Standard magnetometry	14
	1.2 Ac susceptometry	15
2	Sublimation process	17
2	Overta Crystal Microbalance	17
3 4		10
	PhotoElectron Spectroscopy (PES)	19
	4.1 A-ray Photoemission Spectroscopy (APS)	22
5	4.2 Ontaviolet Filotoennission Spectroscopy (OFS)	25
	X-ray Absorption Spectroscopy (XAS)	25
	5.1 A-ray synchron factation	20
	5.2 A-ray absorption spectroscopy principles	27
	5.4 X-ray Natural Linear Dichroism (XNLD)	31
	5.5 X-ray absorption detection	31
6	DEIMOS beamline	32
7	Low Energy Ion Scattering (LEIS)	33
8	Scanning Probe Microscopies (SPM)	34
	8.1 Scanning Tunnelling Microscopy (STM)	34
	8.2 Tunnelling effect	35
	8.3 Scanning Tunnelling Spectroscopy (STS)	39
9	Multiplatform Ultra-High Vacuum system	39
	9.1 Sublimation chamber	40
	9.2 XPS, UPS and LEIS chamber	40
	9.3 STM Omicron system	41
Sec	ction 3	
The	e terbium bis(phthalocyaninato) complex	43
1	Introduction	43
2	Erratic magnetic hysteresis	46

Single molecule magnets sublimated on conducting and magnetic substrates

	2.1 TbPC, synthesis	46
	2.2 Microcrystalline [TbPC, ¹⁰ CH, Ch, hysteresis	47
	2.4 TbPC ₂ in magnetic dilution environment	52
	2.5 Evaluation of the exchange interaction	54
	2.6 Magnetic Circular Dichroism of TbPC ₂ sublimated on quartz	56
3	Characterisation of thick films through low-energy implanted muons	58
4	Toward TbPC2 spintronic devices	67
	4.1 Introduction	67
	4.2 TbPC ₂ /LSMO/STO hybrid surface	68
	4.3 $\text{TbPC}_{2}^{2}/\text{CO}/\text{CU}(\text{lOO})$ hybrid surface	72
Sect	ion 4	
The	Fe ₄ SMM class	83
1	Introduction	83
2	Thick film characterisation	86
3	Preparation and XPS characterisation of Fe4Ph deposited on Au(111)	
	at lowcoverage	89
4	STM characterisation of Fe_4Ph sub-monolayer on Au(111)	91
	4.1 Back exposure sublimation test	94
5	STM investigation on Cu(100) surface	95
6	STM investigation on $CU_2N/CU(100)$ surface	97
7	STS and IETS measurements	98
Sect	ion 5	
Cor	Conclusion References	
Ref		
Acknowledgments		115