

The Lanthanides

ALSO KNOWN AS THE RARE EARTH ELEMENTS, THE LANTHANIDES ARE SILVER, METALLIC ELEMENTS, AND CAN BE FOUND IN MINERALS IN THE EARTH'S CRUST

57 La Lanthanum	58 Ce Cerium	59 Pr Praseodymium	60 Nd Neodymium	61 Pm Promethium	62 Sm Samarium	63 Eu Europium	64 Gd Gadolinium	65 Tb Terbium	66 Dy Dysprosium	67 Ho Holmium	68 Er Erbium	69 Tm Thulium	70 Yb Ytterbium	71 Lu Lutetium
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THE LANTHANIDES ALL FORM
STABLE +3 IONS



THE LANTHANIDES HAVE ELECTRONS IN **THE 4f ORBITAL** LEADING TO THE

LANTHANIDE CONTRACTION



PHOSPHORESCENT **EUROPIUM & TERBIUM** COMPOUNDS ARE USED IN **ANTI-COUNTERFEIT BANK NOTES**



SEVERAL OF THE LANTHANIDES FORM **COLOURED IONS**



NEODYMIUM ALLOYS

ARE USED TO MAKE **THE STRONGEST PERMANENT MAGNETS**



FOUND IN LOUDSPEAKERS AND IN HEADPHONES



SOME LANTHANIDES ARE USED AS **COLOUR PHOSPHORS** IN SOME TV SCREENS



LANTHANIDES REACT WITH **OXYGEN** TO GIVE **OXIDES**



LANTHANIDE COMPOUNDS ARE USED TO **COLOUR CERAMICS & GLASS**



MANY OF THE LANTHANIDES WERE FOUND IN MINERAL ORES FROM A MINE IN THE VILLAGE OF **YTTERBY, SWEDEN**



YTTERBIUM, ERBIUM, TERBIUM & YTTRIUM ARE ALL NAMED AFTER **YTTERBY**

IN 2010, CHINA ACCOUNTED FOR **95%** OF GLOBAL RARE EARTH ELEMENT PRODUCTION



SAMARIUM & COBALT ALLOY IS USED TO MAKE THE MAGNETS FOUND IN ELECTRIC **GUITAR PICK-UPS**