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| # |  | Name | Etymology | Selected applications |
| 21 | Sc | Scandium | from Latin *Scandia* (Scandinavia). | Light aluminium-scandium alloys for aerospace components, additive in metal-halide lamps and mercury-vapor lamps, radioactive tracing agent in oil refineries |
| 39 | Y | Yttrium | after the village of Ytterby, Sweden, where the first rare earth ore was discovered. | Yttrium aluminium garnet (YAG) laser, yttrium vanadate (YVO4) as host for europium in television red phosphor, YBCO high-temperature superconductors, yttria-stabilized zirconia (YSZ), yttrium iron garnet (YIG) microwave filters, energy-efficient light bulbs, spark plugs, gas mantles, additive to steel |
| 57 | La | Lanthanum | from the Greek *lanthanein*, meaning to be hidden. | High refractive index and alkali-resistant glass, flint, hydrogen storage, battery-electrodes, camera lenses, fluid catalytic cracking catalyst for oil refineries |
| 58 | Ce | Cerium | after the dwarf planet Ceres, named after the Roman goddess of agriculture. | Chemical oxidizing agent, polishing powder, yellow colors in glass and ceramics, catalyst for self-cleaning ovens, fluid catalytic cracking catalyst for oil refineries, ferrocerium flints for lighters |
| 59 | Pr | Praseodymium | from the Greek *prasios*, meaning leek-green, and *didymos*, meaning twin | Rare-earth magnets, lasers, core material for carbon arc lighting, colorant in glasses and enamels, additive in didymium glass used in welding goggles, ferrocerium firesteel (flint) products. |
| 60 | Nd | Neodymium | from the Greek *neos*, meaning new, and *didymos*, meaning twin | Rare-earth magnets, lasers, violet colors in glass and ceramics, didymium glass, ceramic capacitors |
| 61 | Pm | Promethium | after the Titan Prometheus, who brought fire to mortals | Nuclear batteries, luminous paint |
| 62 | Sm | Samarium | after mine official, Vasili Samarsky-Bykhovets | Rare-earth magnets, lasers, neutron capture, masers |
| 63 | Eu | Europium | after the continent of Europe | Red and blue phosphors, lasers, mercury-vapor lamps, fluorescent lamps, NMR relaxation agent |
| 64 | Gd | Gadolinium | after Johan Gadolin (1760–1852), to honor his investigation of rare earths | High refractive index glass or garnets, lasers, X-ray tubes, computer memories, neutron capture, MRI contrast agent, NMR relaxation agent, magnetostrictive alloys such as Galfenol, steel additive |
| 65 | Tb | Terbium | after the village of Ytterby, Sweden | Additive in Neodymium based magnets, Green phosphors, lasers, fluorescent lamps, magnetostrictive alloys such as Terfenol-D |
| 66 | Dy | Dysprosium | from the Greek *dysprositos*, meaning hard to get | Additive in Neodymium based magnets, lasers, magnetostrictive alloys such as Terfenol-D |
| 67 | Ho | Holmium | after Stockholm (in Latin, *Holmia*), native city of one of its discoverers | Lasers, wavelength calibration standards for optical spectrophotometers, magnets |
| 68 | Er | Erbium | after the village of Ytterby, Sweden | Infrared lasers, vanadium steel, fiber-optic technology |
| 69 | Tm | Thulium | after the mythological northern land of Thule | Portable X-ray machines, metal-halide lamps, lasers |
| 70 | Yb | Ytterbium | after the village of Ytterby, Sweden | Infrared lasers, chemical reducing agent, decoy flares, stainless steel, stress gauges, nuclear medicine |
| 71 | Lu | Lutetium | after Lutetia, the city that later became Paris | Positron emission tomography – PET scan detectors, high-refractive-index glass, lutetium tantalate hosts for phosphors |