Methods to Impart Color and Patterns on Metal (#7327)

A method of coloring metal surfaces without damaging its properties

Georgia Tech researchers have developed methods for coloring metals without the use of traditional paint. Metals go through a physical vapor deposition or sputtering process, which deposits chemical species onto the surface to create a thin coating on the metal. The color imparted onto the metal is controlled by the chemical species used and the size of the particles in sputtering. Additionally, the thickness of the coating is adjustable based on the angle and orientation of the metal during sputtering. Masks can be applied to the metal to create colors, patterns, and apply logos. This process is irreversible, permanently imparting color on the metal, which will not wear away with time or affect the physical properties of the material.

Benefits/Advantages

- **Long Lasting**: Does not wear off or fade
- **Stream-lined**: Eliminates the need for paint touch-ups and repairs
- **Cost Effective**: Prevents costly repair of material damage caused by paint
- **Customizable**: A range of colors and patterns can be achieved through simple adjustments

Potential Commercial Applications

- Batteries
- Automobiles
- Consumer electronic products
- Construction

Background/Context for This Invention

Color is an important aspect of many commercial products, not only for differentiation but also for simple aesthetic appeal. While paint is commonly used to color products, it is not a viable solution in many applications because it degrades electrical conductivity. This is far from ideal since metals are generally selected for their inherent conductivity and strength, yet also need to look aesthetically pleasing depending on their final uses. Thus, there is a need for a way to apply color to metals without compromising the metal's properties.

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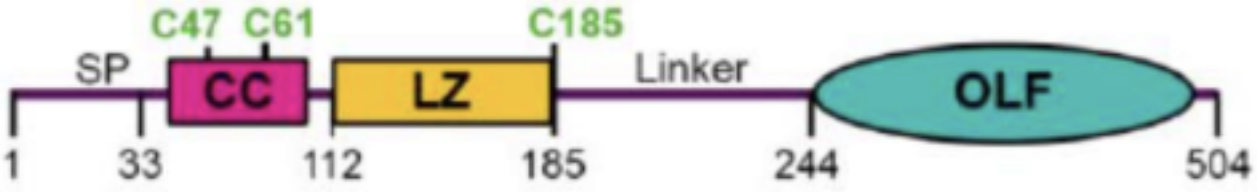
More Information

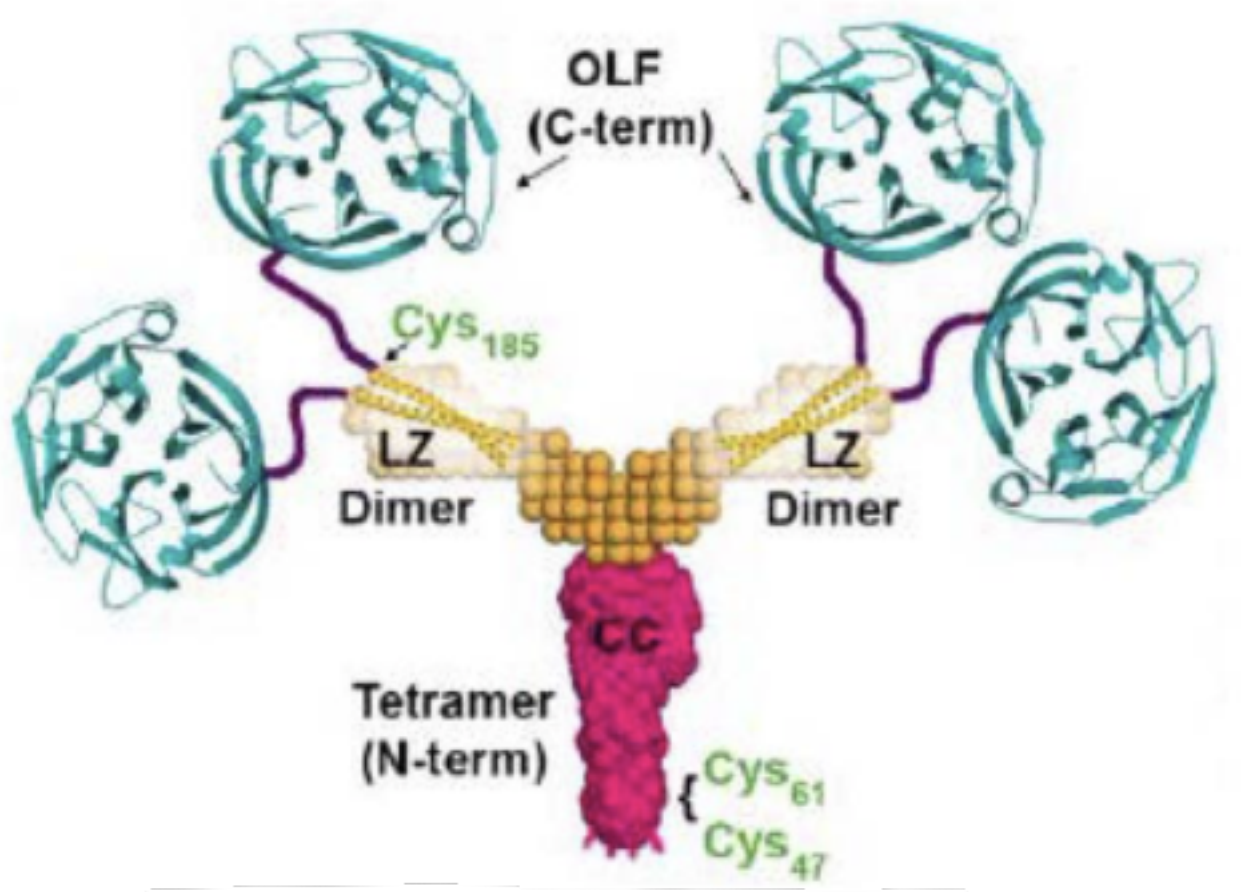
Publications

For more information about this technology, please visit:
https://licensing.research.gatech.edu/technology/methods-impart-color-and-patterns-metal

Images:



The gene structure depicting the domains of myocilin, including signal peptide, location of key cysteine residues, and its coiled-coil, leucine zipper, and olfactomedin domains.



The myocilin quaternary structure based on solution X-ray scattering, X-ray crystallography, and chemical cross-linking experiments.