

Uses of Ultraviolet Radiation

<https://gemini.google.com/app/bb1f402f4bc3a3da>

Response: The correct answer is **(1) Can be used to identify secret codes in currency notes.**

- **(1) Correct:** Ultraviolet (UV) radiation is widely used in counterfeit detection. Currency notes contain security marks printed with fluorescent inks that absorb UV light and re-emit visible light (fluorescence), revealing hidden watermarks or security codes.
 - **(2) Incorrect:** Infrared (IR) radiation is typically used in physiotherapy heat treatments, while UV is mainly used in dermatology for phototherapy (e.g., psoriasis).
 - **(3) Incorrect:** X-rays are used for determining crystal structures through X-ray crystallography because their wavelengths match atomic spacing.
 - **(4) Incorrect:** Gamma rays and high-energy X-rays (radiotherapy) are used in cancer treatment.
 - **(5) Incorrect:** While UV radiation does have higher energy than visible light, this is because its wavelength is **shorter** (lower) than visible light, not higher ($E = \frac{hc}{\lambda}$).
-