

Defeating Image Intensifier Night Vision Devices through Near Infrared Reflectance Optimization

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ABSTRACT:

The development of individual camouflage specifically designed to defeat Image Intensifier night vision devices is very limited. A control Ghillie suit, consisting of an equal proportion colors, for a woodland environment, was constructed using strips of fabric, which are all solid colors: tan, OD green, hunter green, and neutral gray. The spectral reflectance of each of these fabrics was measured against a specific woodland background. From there, an “optimized Ghillie suit” consisting of 68% tan, 15% OD green, 5% hunter green, and 12% gray, was constructed to match the near infrared reflectance of the background; then underwent a target detection field test against a white mannequin torso and an ACU pattern blouse. The participants applied Signal Detection Theory and Levels of Processing framework when they attempted to correctly identify the stimulus in the target area. The optimized Ghillie suit performed significantly better (p -value < 0.000) than the white control and ACU pattern at all distances. These results can be applied to designing an actual soldier uniform to be used during nighttime operations that will defeat detection by night vision devices.

KEYWORDS: camouflage, night vision devices, Ghillie suit

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