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# Effect of Au codoping on the scintillation properties of BaBrCl:Eu single crystals

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## Abstract:

This paper reports the effects of Au codoping on the scintillation and optical properties of BaBrCl:Eu single crystals grown by the Bridgman-Stockbarger method. The study, performed by varying both Eu and Au concentrations, demonstrates the highly effective role of Au codoping for improving the scintillation light output for all the considered europium concentrations. These, up to trifold, improvements are accompanied by a substantial reduction in the long scintillation decay tails, and in the thermo- and optically stimulated luminescence intensities with respect to crystals doped only with Eu. The role of Au ions is discussed based on these experimental results.

## Keywords:

BaBrCl:Eu,Au; single crystal; codoping; scintillator

## 1. Introduction

In recent years the search and development of new scintillating crystals for gamma detection, and specifically for homeland security applications, have taken a turn toward compromising cost and performance [1-6]. The commercially available NaI:Tl is still the most extensively used scintillator material since it can be easily produced in large quantities at very low costs.

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