



## The photoinactivation of pathogenic bacteria using synthesized benzodioxole-BODIPY dyes

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### Streszczenie

The paper focuses on the synthesis of the chloro-, methyl and carbonyl derivatives of Benzodioxole-BODIPY dye (BODIPY – 4,4-difluoro-4-bora-3a,4a-diaza-s-indacene). Three BODIPY dyes have been synthesized and characterized by biological, spectroscopic, crystallographic and computational methods. The influence of the electron donating and electron withdrawing properties of the substituents on the position of the absorption and emission bands have been analysed. The synthesized compounds have been evaluated as photosensitizers for the photodynamic inactivation of *Staphylococcus aureus* (*S. aureus*) and *Escherichia coli* (*E. coli*). The dyes revealed a significant photocidal activity against these pathogenic bacteria at low micromolar concentrations. The photo-toxic results showed that the synthesized dyes impact more affectively on *S. aureus* (Gram-positive bacteria) compared to *Escherichia coli* (Gram-negative bacteria).

### Słowa kluczowe

BODIPY dye, *S. aureus*, *E. coli*, Photoinactivation, TD-DFT

### Adres publiczny

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