

# Instytut Inżynierii Chemicznej

Adres artykułu: <https://iich.gliwice.pl/pl/artykul/cracking-the-chloroquine-conundrum-the-application-of-defective-uio-66-metal-organic-framework-materials-to-prevent-the-onset-of-heart-defects-in-vivo-and-in-vitro>

## Cracking the chloroquine conundrum: the application of defective UiO-66 metal-organic framework materials to prevent the onset of heart defects-in vivo and in vitro

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In this study, we present a modulated synthesis nanocrystalline defective UiO-66 metal-organic framework as a potential chloroquine diphosphate (CQ) delivery system. Increasing the concentration of hydrochloric acid during the modulated synthesis resulted in a considerable increase of pore volume, which enhanced the CQ loading in CQ@UiO-66 composites. Drug release tests for CQ@UiO-66 composites have confirmed prolonged CQ release in comparison with pure CQ. In vivo tests on a Danio rerio model organism have revealed that CQ released from CQ@UiO-66 25% showed lower toxicity and fewer cardiotoxic effects manifested by cardiac malformations and arrhythmia in comparison to analogous doses of CQ. Cytotoxicity tests proved that the CQ loaded on the defective UiO-66 cargo resulted in increased viability of cardiac cells (H9C2) as compared to incubation with pure CQ. The experimental results presented here may be a step forward in the context of reducing the cardiotoxicity CQ.

## Metryczka

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