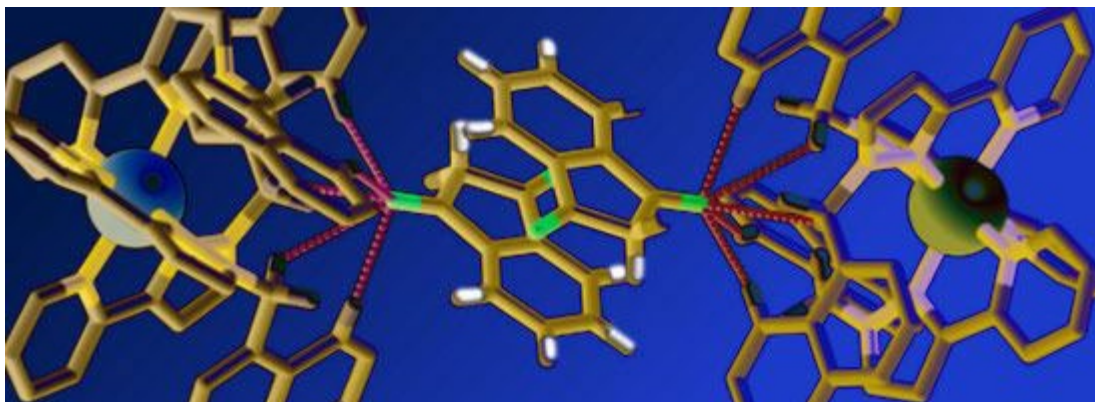




## Implen Journal Club | April Issue

Welcome to our forth issue of the #Implen #JournalClub in 2021.



In this month's Implen NanoPhotometer® JournalClub, we would like to kick off with putting the focus on two publications about the use of an octanuclear, approximately cubic, M8L12 coordination cage Hw as catalysts. Cristina Mozaceanu, Christopher Taylor, Jerico Piper, Stephen Argent, Michael Ludden and Michael Ward from University of Warwick describe the aldol condensation of indane-1,3-dione as well as binding of anions to the surface of a coordination cage providing enzyme-like levels of the rate acceleration of reactions. Cage-catalysed conversion of indane-1,3-dione to bindone was monitored in a NanoPhotometer® C40 by measuring the increase in optical density at 550 nm arising from product formation. Additionally, it was used to record the UV/VIS spectra of bromocresol purple

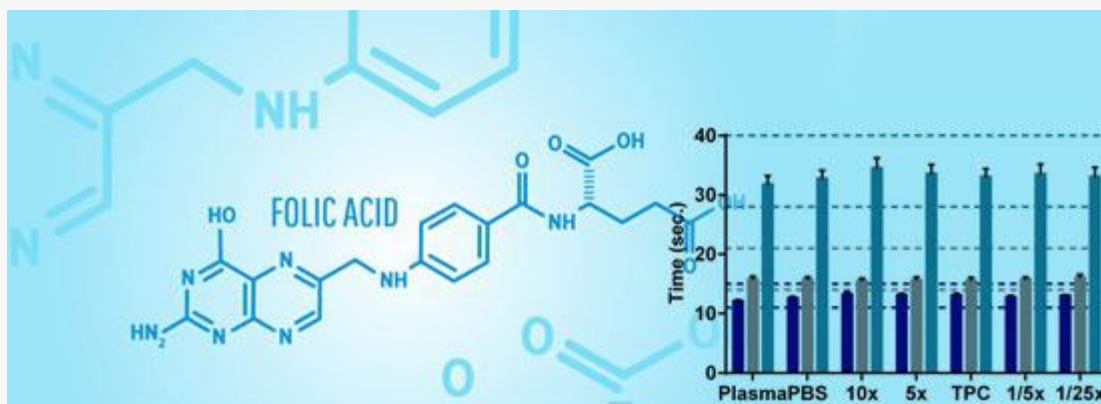
after each addition of 0.1 M NaOH solution and the absorbance at 560 nm plotted against the pH.

### Catalysis of an Aldol Condensation Using a Coordination Cage

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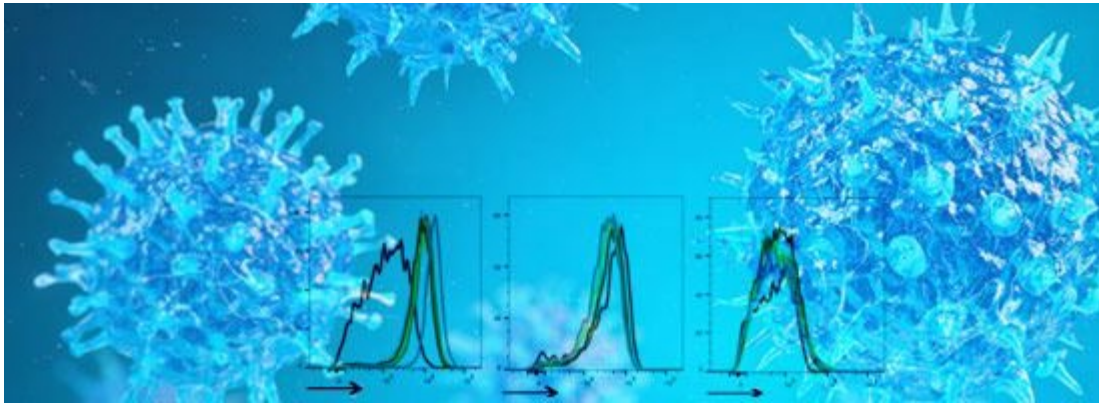
Outside the box: quantifying interactions of anions with the exterior surface of a cationic coordination cage

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Gene therapy bears great potential to correct gene-related diseases; however, finding a safe delivery vehicle remains under investigation. Elsa Patricia Rondon, Houda Abir Benabdoun, Francis Vallières, Maicon Segalla Petrônio, Marcio José Tiera, Mohamed Benderdour and Julio Cesar Fernandes from Université De Montréal and São Paulo State University study the design of safe and functionalized nanoparticles that release their therapeutic cargo, namely small interfering RNA. The aim of their current research was to evaluate the toxicological profile for potential future clinical applications, showing DEAE12-CH-PEG-FA2/siRNA nanoparticles fulfill the existing ISO, ASTM and NCL guidelines' threshold criteria. The NanoPhotometer® was used to measure folic acid absorbance at 363 nm using Diethylaminoethyl-chitosan as a blank to calculate the percentage of incorporated polyethylene glycol-folic acid.

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A major characteristic of HBV is the secretion of large amounts of complete and incomplete viral particles, described as extracellular vesicles (EVs). The functions and composition of the EVs were affected by nucleotide reverse transcriptase inhibitors (NRTIs), suggesting that the EVs are involved in the pathogenesis of HBV hepatitis. Masatoshi Kakizaki, Yuichiro Yamamoto, Suemi Yabuta, Natsumi Kurosaki, Tatehiro Kagawa and Ai Kotani from Tokai University used the NanoPhotometer® to measure the amount of EVs labelled with PKH26 dye for their studies.

[Learn more](#)

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