**Approaches and perspectives of nanoclays in agriculture advancement**

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**Introduction**

The continuous increase of world population is demanding increasing quantity and quality of food supply, and consequently, efficient and environment-friendly nutrients’ supply to the crops. By contrast, the disadvantages of the conventional agrochemicals are noticed by the public, which requires a new revolution of agricultural technology. [1] The combination of nanotechnology with agriculture is attracting massive attention. [2] Among the potential nanomaterials, synthetic nanoclays have demonstrated inspiring properties and performance as sustainable agrochemicals.

**Aims**

In this presentation, we will briefly summarise the background and the perspectives of nano-enabled agriculture, introduce our recent approaches to the interdisciplinary research bridging nanotechnology and agriculture with synthetic nanoclays, and propose our hypothesis of potential research topics.

**Methods**

Nanoclays were prepared via co-precipitation, mixing salt solution and base solution at a certain molar ratio together. The adoption of this easy preparation method is of industrial interests for smooth translation from research to industry.

**Results**

The synthetic nanoclays designed for long-term micronutrient foliar fertilisers with plate-like morphology and uniform deposition on the leaf surface have suitable solubility to maintain the concentration levels of metal ions for sustainable correction of micronutrient deficiency. [3] Layered double hydroxides, a family of anionic synthetic nanoclays, can load and protect double-strand RNA and consequently protect crops against viruses via RNA interference. [4]

**Discussion**

The designed rationale of synthetic nanoclays is the utilisation of natural physical phenomenon and physiological behaviour of plants. The nanoclays degrade during its effective period, leaving no environmental concern in the application.

**Conclusion**

The unique properties of synthetic nanoclays could afford a reliable matrix in the R&D of future foliar agrochemicals with sustainable crop protection and correction of nutrient deficiency.

**References**

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