ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ
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ВЫСШЕГО ОБРАЗОВАНИЯ
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«ВЫСШАЯ ШКОЛА ЭКОНОМИКИ»»

Коллоидное серебро как нанозим: синтез и морфология

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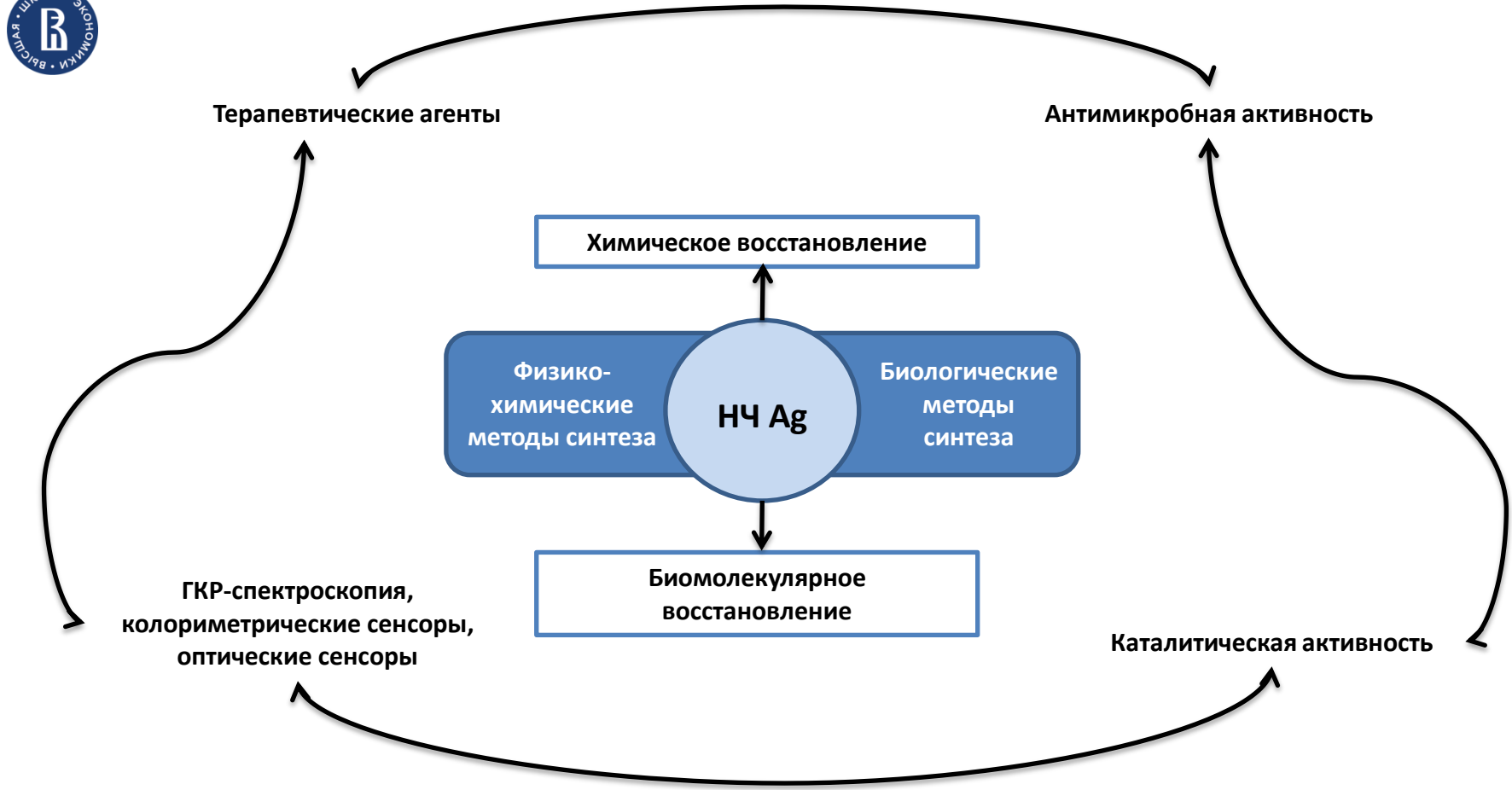
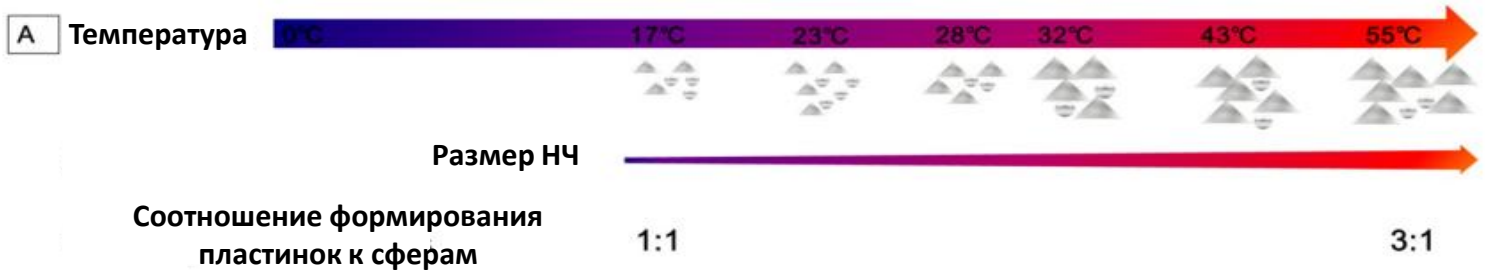
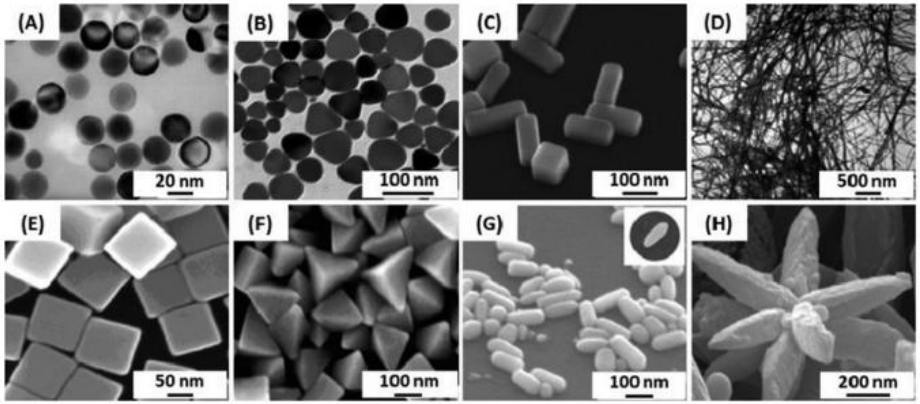
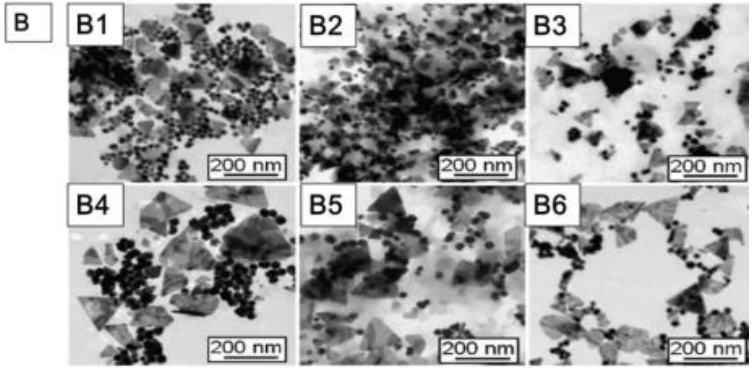

Терапевтические агенты
Антимикробная активность
Химическое восстановление
Физико-химические методы синтеза
НЧ Ag
Биологические методы синтеза
Биомолекулярное восстановление
ГКР-спектроскопия, колориметрические сенсоры, оптические сенсоры
Каталитическая активность

Морфология наночастиц серебра







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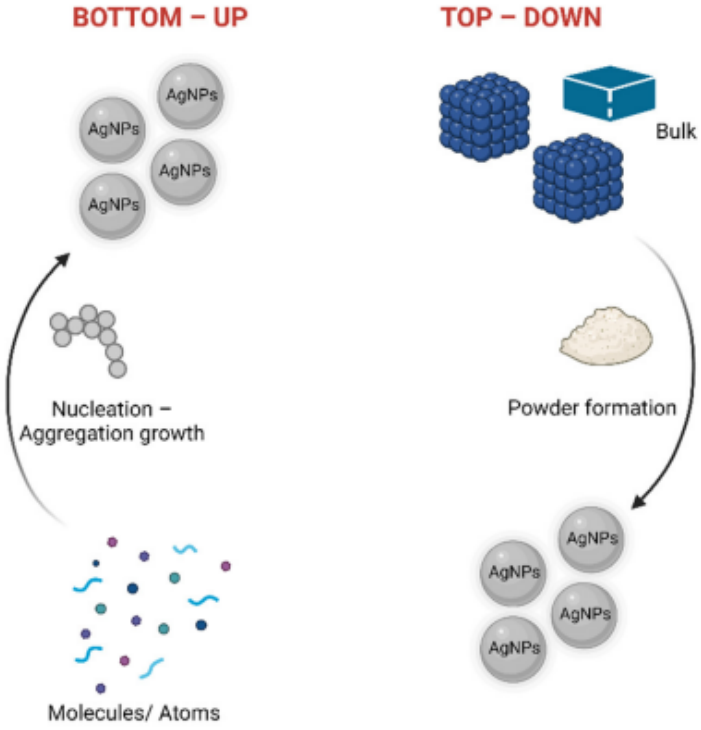
Синтез наночастиц серебра

Chemical method:

- Chemical reduction
- Irradiation
- Electrochemical
- Microemulsion
- Photoreduction

Biological method

- Bacteria
- Fungi
- Plant extract



Physical method

- Evaporation – condensation
- Laser ablation
- Electrical irradiation
- Gamma irradiation
- Lithography

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Table 1. Advantages and disadvantages of different chemical methods.

No.	Method	Advantages	Disadvantages
1	Chemical reduction	Operate easily Low cost	Toxic and hazardous chemicals
2	Microemulsion techniques	Low input of mechanical force Theoretical consistency	Exceptionally susceptible to change Extensive formulation effort Low concentrations of AgNPs
3	Photochemical method	In situ highly fast dissolving AgNPs in the luminescence region Utilize at ambient temperature No dangerous or potent reducing agents Not rely on costly equipment or highly trained personnel	Long time duration expensive equipment experimental environment
4	Electrochemical reduction	Metal ions come from sarcrificial anodes to reduce the quantity of precursors. Simple reaction control, moderate reaction conditions, and less pollution	Unsuitable for large-scale AgNP production
5	Microwave-assisted method	Efficacy of energy conversion at a high level Time-saving Cleanliness, convenience Produce on a large scale AgNPs with maximum dispersal	Expensive equipment Unfeasible for reaction monitoring Unsuitable for scale-up

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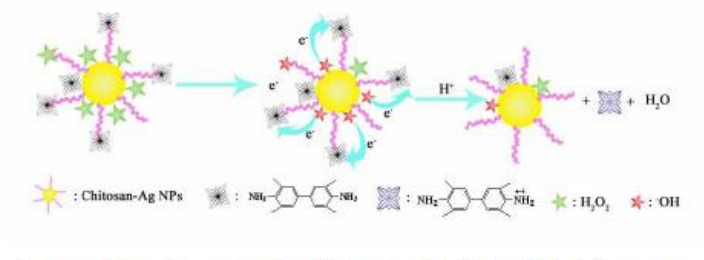
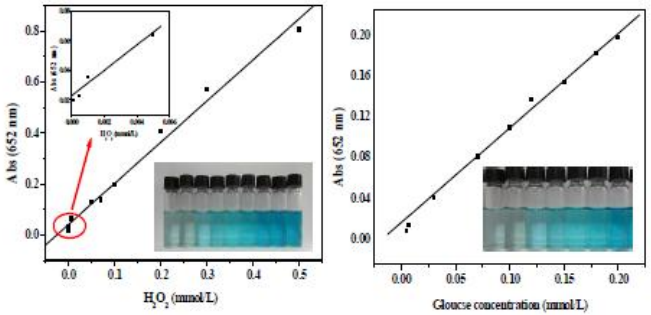
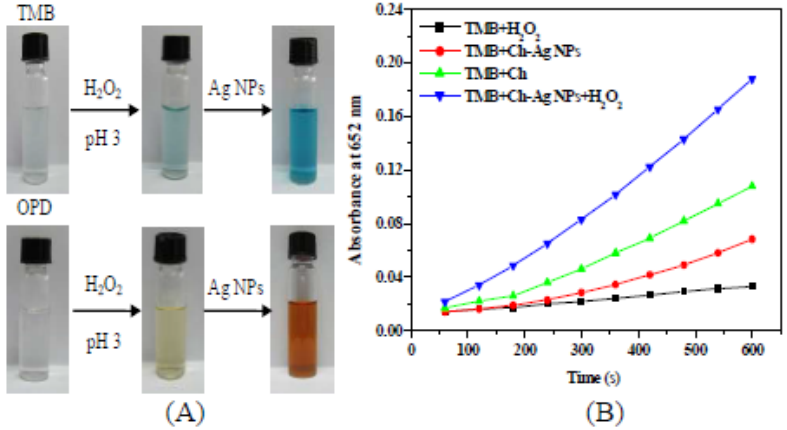
Пероксидазоподобная активность наночастиц серебра, стабилизированных хитозаном



Possible mechanism for the Ch-Ag NPs -H_2O_2-TMB system.



The response curves of H_2O_2 (left) and glucose (right).

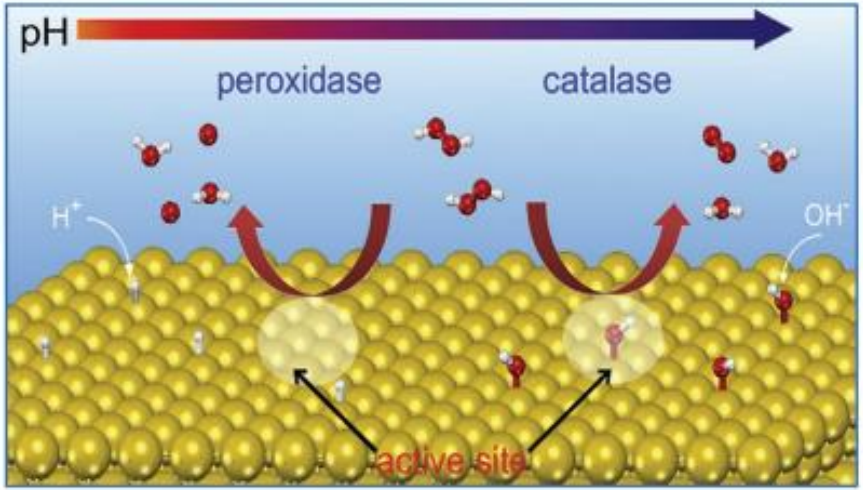


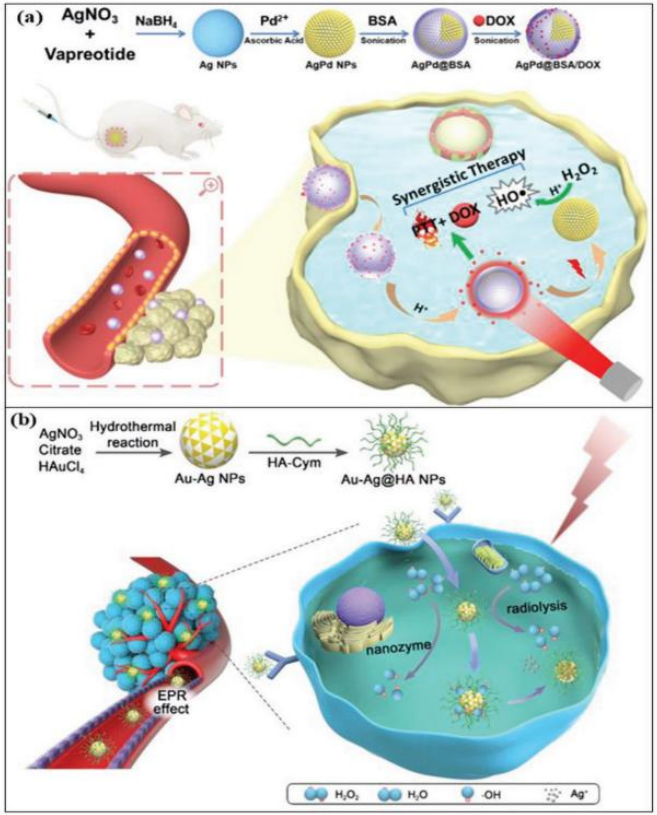
(A) (B)

(A) Images of oxidation color reaction of TMB and OPD by H_2O_2 with and without Ch-Ag NPs. (B) Time-dependent absorbance changes at 652 nm of TMB in different reaction systems in a 0.2 M NaAc buffer (pH 3.0). Conditions: TMB concentration: 0.5 mM; H_2O_2 concentration: 2.5 mM; Ag NPs concnetration: 3.9 mg/L.

10.1039/c2an00000x

Серебряные нанозимы





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Спасибо за внимание!