

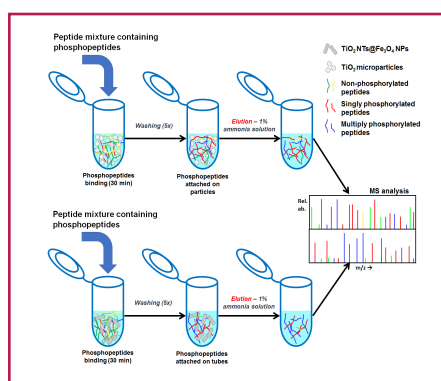
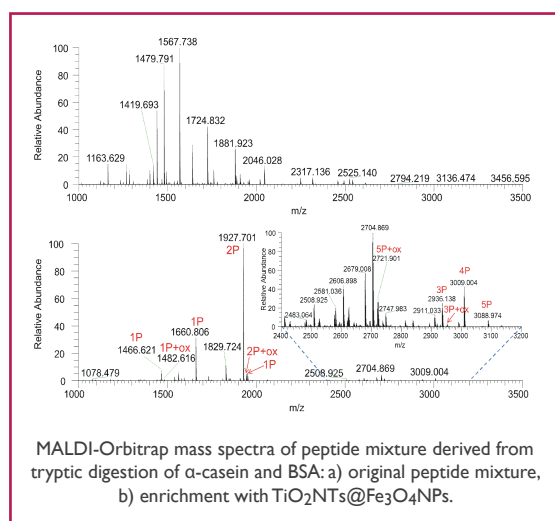
# NEW HIGHLY SELECTIVE INTERFACE FOR PHOSPHOPROTEOME PROFILING

## KEY TECHNOLOGY FEATURES

- Non-toxic, robust material, it can be easily separated from any solution due to its intrinsic magnetism.
- Chemical stability across the range pH 1 - 12, stable in 5% trifluoroacetic acid and/or in organic solvent - such as acetonitrile.
- Simple decontamination by UV-light induced photo-catalytic treatment at low-costs allowing multiple use of the isolation interface.
- The use of the standard laboratory equipment and easy scale-up for preparative use.
- Significantly higher selectivity for phosphopeptides as compared to main competitor -  $\text{TiO}_2$  microspheres (GL Science, Japan), better preferential affinity for double or triple phosphorylated peptides, substantial reduction of contaminating peptides.

## MATERIAL CHARACTERISTIC

$\text{TiO}_2$ nanotubes size	$\varnothing$ inner diam. $\approx$ 125/230 nm
$\text{Fe}_3\text{O}_4$ nanoparticles size	$\varnothing$ 8 nm
pH stability	pH 1-12
recyclability	min. 4 times
chemical stability	all commonly used buffers and solvents
production	in lab 100 mg up to 1 g per day batch to batch high reproducibility know how to scale-up
storage	dry or in water/organic solvents



## POTENTIAL APPLICATIONS

The production of highly pure biomolecules, for example, proteins, polypeptides, oligosaccharides, or nucleic acids, is a key requirement for their use in medicine and life sciences. In particular, they are widely used for in vivo applications, such as for the production of efficient and selective biopharmaceuticals, including targeted bioactive therapeutics, recombinant proteins, or vaccines. The development of suitable materials and purification methods for these biologically active compounds is an important topic in current biomedical research.

The specificity of  $\text{TiO}_2\text{NTs}@Fe_3\text{O}_4\text{NP}$ , surmounted by their unique properties, may open new pathways for the isolation and identification of clinically important biomolecules and for a whole range of in vitro life science applications.

## INVENTORS

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## PATENT SITUATION

US patent pending, priority 2014. CZ patent granted. Filing of a complementary priority patent application in preparation.

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