Ph. D. Open Seminar

Department of Chemistry, IISER Bhopal

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Thesis Title: **C-terminal Modified Amphiphilic L-Phenylalanine Derivatives: Anticancer Potential and Templates for Gold Nanoassemblies**

Date: **08/10/2018** Time: **12:00 PM** Venue: **AB2-401**

Abstract

Self-assemblies formed by chemical derivatives of hydrophobic amino acids are employed for creating fascinating soft materials that find utility in fields such as localised drug delivery, tissue engineering and itself as therapeutics.[1] My PhD research is focussed on designing L-Phenylalanine (L-Phe) derivatives having the propensity to self-assemble in diverse nano-architectures. While some of the prepared L-Phe derivatives acted as low molecular weight hydrogelators, others turned out to be potent histone deacetylase inhibitors. In this talk, I will discuss the design and preparation of some C-terminal modified L-Phe derivatives that showed highly versatile hydrogelation profile. These hydrogels showed promising drug-entrapment ability.[2] Cyclic imidazoline and oxazoline derivatives of L-Phe showing pH-induced structural changes were also explored. The structural changes in these molecules manifest as morphological changes in the self-assemblies formed from them.[3] I also designed L-Phe derivatives containing hydroxamate residue at the C-terminus. These compounds were found to be potent molecular inhibitors of histone deacetylase enzymes.[4] The therapeutic/anti-cancer potential of these compounds was extensively investigated.[5] I also realised water-assisted reduction of Au(III) ions using an amphiphilic L-Phe derivative. The gold nanoparticles thus obtained spontaneously formed raspberry-like nanoassemblies.[6] In addition to these, I have also designed a reactive oxygen species (ROS)-responsive HDAC inhibitor in the side-lines of my thesis research.[7]

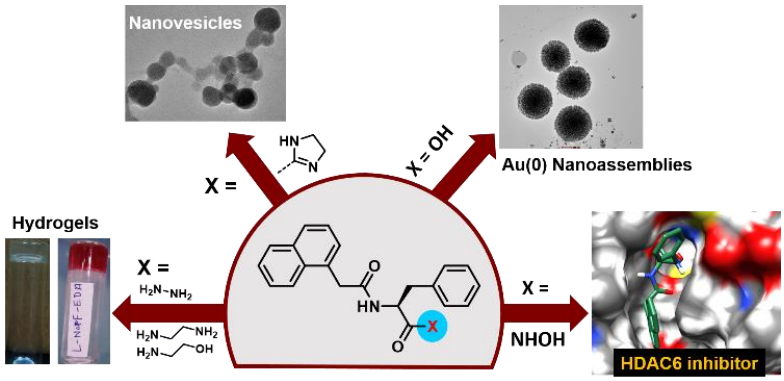

Figure: Key findings of thesis work with L-Phe derivatives.

References:

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3. **S. D. Bhagat**, Reshma R., Pankaj K., A. Srivastava, s*ubmitted*
4. **S. D. Bhagat**, A. Srivastava, *under preparation.*
5. **S. D. Bhagat**, A. Chanchal, M. Gujrati, R. K. Mishra, A. Srivastava, *submitted*
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7. **S. D. Bhagat**, U. Singh, R. K. Mishra, A. Srivastava, *ChemMedChem*
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