Citation for Young Researcher Award – Assoc Prof Liu Bin

Dr Liu is well recognized for her contributions in polymer chemistry and the application of polymers for sensing, imaging and solar cells. For example Dr Liu has designed and fabricated the world's most efficient polymer-based dye sensitized solar cells in 2010. Organic or polymer solar cells are emerging alternatives to the popular silicon based solar cells. They have some very strong application features – lightness in weight, flexibility and transparency; and hence they can be used as paintable energy harvesting devices for the exterior of buildings; as portable chargers for electronic products, and for home décor. Organic solar cells also have their Achilles' heel - charge recombination within the cell which results in a low device efficiency. Dr Liu and her team traced the root cause of low efficiency to be the lack of good mixing between the inorganic and organic components of the cell, and carried out in-situ polymerization of conjugated polymers in a thin cell to allow the inorganic and organic components to be integrated into an interdigitated network. The discovery and the design have significantly improved the organic solar cell efficiency from 2.7% to 7.1%.

Dr Liu has published extensively, with 150 publications and 4500 citations to her credit. She also holds 21 patents with 12 of them licensed. Dr Liu is the editor and editorial board member of several international journals. Recently, she was invited to deliver lectures as an Asia Excellence and Asia Rising Star in international conferences. Dr Liu is a recipient of several prestigious awards including the Singapore National Science and Technology Young Scientist Award 2008 and L'Oreal-Singapore Women in Science National Fellowship 2011.