

Abstract Submitted  
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**Formation and structural properties of multi-block copolymer vesicles**<sup>1</sup> RONG WANG, SHIYING MA, Nanjing University — Due to the unique structure, vesicles have attracted considerable attention for their potential applications, such as gene and drug delivery, microcapsules, nanoreactors, cell membrane mimetic, synthetic organelles, *etc.* By using dissipative particle dynamics, we studied the self-assembly of amphiphilic multi-block copolymer. The phase diagram was constructed by varying the interaction parameters and the composition of the block copolymers. The results show that the vesicles are stable in a large region which is different from the diblock copolymer or triblock copolymer. The structural properties of vesicles can be controlled by varying the interaction parameters and the length of the hydrophobic block. The relationship between the hydrophilic and hydrophobic block length *vs* the aqueous cavity size and vesicle size are revealed. The copolymers with shorter hydrophobic blocks length or the higher hydrophilicity are more likely to form vesicles with larger aqueous cavity size and vesicle size as well as thinner wall thickness. However, the increase in hydrophobic-block length results to form vesicles with smaller aqueous cavity size and larger vesicle size.

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Rong Wang  
Nanjing University

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