

## **Description of Additional Supplementary Files**

File Name: Supplementary Movie 1

Description: A video of a DMD simulation of CATCH(4+/4-) co-assembly.

File Name: Supplementary Movie 2

Description: A video of a DMD simulation of CATCH(6+/6-) co-assembly.

File Name: Supplementary Data 1

Description: Initial trajectory for CATCH(2+/2-) DMD simulation.

File Name: Supplementary Data 2

Description: Final trajectory for CATCH(2+/2-) DMD simulation.

File Name: Supplementary Data 3

Description: Initial trajectory for CATCH(4+/4-) DMD simulation.

File Name: Supplementary Data 4

Description: Final trajectory for CATCH(4+/4-) DMD simulation.

File Name: Supplementary Data 5

Description: Initial trajectory for CATCH(6+/6-) DMD simulation.

File Name: Supplementary Data 6

Description: Final trajectory for CATCH(6+/6-) DMD simulation.