## Supporting information

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## Multi-scale model Integrated particle dynamics and evolutionary algorithm with the coarse-grained particle partitioning ratio strategy for calculating the dissolution behaviors of supercritical carbon dioxide in polymer fluids

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**Supporting information 2:** Potential parameters of evolutionary particles (=4.26 *nm*)

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| --- | --- | --- |
| Evolutionary Particles | (*10-21 J*) | (*nm*) |
| SCCO2- SCCO2 | 1.831 | 0.3597 |
| SCCO2-PS | 2.538 | 0.2942 |
| SCCO2-PP | 2.537 | 0.2917 |
| SCCO2-PLGA | 2.622 | 0.2952 |
| SCCO2-HDPE | 2.411 | 0.2936 |
| SCCO2-PLLA | 2.562 | 0.2915 |
| SCCO2-PBS | 2.712 | 0.2906 |
| SCCO2-PVAc | 2.716 | 0.2786 |
| PS-PS | 2.893 | 0.2378 |
| PP-PP | 2.785 | 0.2785 |
| PLGA-PLGA | 2.923 | 0.2496 |
| PLLA -PLLA | 2.931 | 0.2465 |
| PBS -PBS | 2.842 | 0.2786 |
| PVAc -PVAc | 2.814 | 0.2845 |
| HDPE-HDPE | 2.888 | 0.2875 |