WHAT IS CLAIMED IS:

1. Use of a therapeutically effective amount of an anti-cancer agent encapsulated in nanoparticles in the manufacture of a medicament for treating cancer in a subject intraperitoneally, wherein nanoparticles are characterized to slowly release anti-cancer agent at a rate of 30% or less per 24 hours based on in vitro drug dissolution.

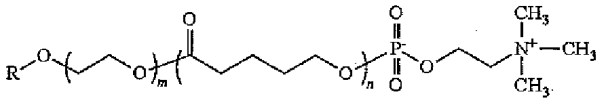
2. The use of claim 1, wherein the nanoparticles comprise a phospholipid selected from the group consisting of a hydrogenated naturally-occurring phospholipid, cholesterol and d-alpha-tocopheryl polyethylene glycol succinate.

3. The use of claim 2, wherein the phospholipid is hydrogenated soy phosphatidyl choline (HSPC).

4. The use of claim 1, wherein the nanoparticles comprise one or more block copolymers comprising a hydrophobic block, a hydrophilic block bonded to the hydrophobic block, and one or more zwitterions.

5. The use of claim 4, wherein the hydrophobic block is polycaprolactone (PCL), polyvalerolactone (PVL), poly(lactide-co-glycolide) (PLGA), polylactic acid (PLA), polybutyrolactone (PBL), polyglycolide, or polypropiolactone (PPL); and the hydrophilic block is polyethylene glycol (PEG), hyaluronic acid (HA) or poly-γ-glutamic acid (PGA).

6. The use of claim 1, wherein the nanoparticles comprise a polymeric micelle comprising a block copolymer of the following formula:



wherein R represents a hydrogen atom, a C_{1-6} alkyl group, a benzyl group or an acyl group; and m and n, are each independently an integer of 10-100.

7. The use of claim 6, wherein said polymeric micelle has a diameter ranging from about 20 nm to about 1,000 nm.

8. The use of claim 1 wherein said anti-cancer agent is selected from the group consisting of gemcitabine, idarubicin/cytarabine, etopside phosphate, gleevac, temozolomide, bortezomib, letrozole, cetuximab, bevacizumab, paclitaxel, nab-paclitaxel, docetaxel, erlotinib, pemetrexed, pemetrexed/carboplatin, paxlitaxel/carboplatin, letrozole/cyclophsphamide, temsirolimus,, bevacizumab/temsirolimus, lpilimumab, RAD001, Pazopanib, FOLFIRI, BKM120, GSK1120212, PF-05212384/irinotecan, AZD2171, PF-04691502, cyclophosphamide, cisplatin, cytarabine/daunorubcin, tersirolimus, erlotinib/temsirolimus, capecitabine, tamoxifen,

bortezomib, trastuzumab, docetaxel/capecitabine, trastuzumab/tipifarnib, tipifarnib/gemcitabline, tootecan, and combinations thereof.

9. The use of claim 2, 4, or 6, wherein said anti-cancer agent is paclitaxel.

10. The use of claim 1 wherein said cancer is ovarian cancer, lung cancer, liver cancer, gastric cancer, or colon cancer.

11. The use of claim 10, wherein said cancer is ovarian or colon cancer.

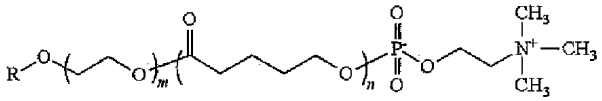
12. Use of a therapeutically effective amount of an anti-cancer agent encapsulated in sustained release nanoparticles in the manufacture of a medicament for treating cancer via regional delivery in a subject wherein the anti-cancer agent nanoparticles are characterized to slowly release anti-cancer agent at a rate of 30% or less per 24 hours based on in vitro drug dissolution and are administered intrapleurally.

13. The use of claim 12, wherein the sustained release nanoparticles comprise a phospholipid selected from the group consisting of a hydrogenated naturally-occurring phospholipid, cholesterol and d-alpha-tocopheryl polyethylene glycol succinate.

14. The use of claim 13, wherein the phospholipid is hydrogenated soy phosphatidyl choline (HSPC).

15. The use of claim 12, wherein the sustained release nanoparticles comprise one or more block copolymers comprising a hydrophobic block, a hydrophilic block bonded to the hydrophobic block, and one or more zwitterions.

16. The use of claim 12, wherein the sustained release nanoparticles comprise a polymeric micelle comprising a block copolymer of the following formula:



wherein R represents a hydrogen atom, a C_{1-6} alkyl group, a benzyl group or an acyl group; and m and n, are each independently an integer of 10-100.

17. The use of claim 12, wherein the cancer is ovarian cancer, lung cancer, liver cancer, gastric cancer, or colon cancer.

18. The use of claim 17, wherein the cancer is metastasis.

19. The use of claim 12, wherein said subject has severe adhesion in the peritoneal cavity.

20. The use of claim 13, 15 or 16, wherein said anti-cancer agent is paclitaxel.