CLAIMS

1. A method of preparing solid particles of a compound, said method comprising controlling provision of a liquid phase, wherein said liquid phase comprises a solution of the compound, in a first flow direction to a membrane, said membrane defining a plurality of pores; and controlling the supersaturation of the liquid phase after it has passed through the membrane via the plurality of pores, to form solid particles of the compound.

2. The method according to claim 1 wherein the supersaturation of the liquid is controlled by cooling the liquid phase, antisolvent precipitation or reverse antisolvent precipitation.

3. The method according to claim 2 wherein the supersaturation of the liquid is controlled by cooling the liquid phase after it has passed through the membrane.

4. The method according to claim 2 wherein the supersaturation of the liquid is controlled by antisolvent precipitation after the liquid phase has passed through the membrane.

5. The method according to claim 2 wherein the supersaturation of the liquid is controlled by reverse antisolvent precipitation after the liquid phase has passed through the membrane.

6. The method according to any one of the preceding claims wherein the method comprises the preparation of solid particles of a compound in crystalline form or amorphous form, or a combination thereof.

7. A method of preparing solid particles of a compound, said method comprising dispersing a first liquid phase in a second liquid phase;

wherein said first liquid phase comprises a solution of the compound and said second liquid phase comprises an antisolvent; or said first liquid phase comprises an antisolvent and said second liquid phase comprises a solution of the compound;

said method comprising controlling provision of the first liquid phase in a first flow direction to a membrane, said membrane defining a plurality of pores; and controlling provision of the second liquid phase to the membrane in a crossflow to the first flow direction, via the plurality of pores, to form solid particles of the compound.

8. The method according to claim 7 wherein the method comprises the preparation of solid particles of a compound in crystalline form or amorphous form, or a combination thereof.

9. A method of preparing solid particles of a compound, said method comprising dispersing a first liquid phase in a second liquid phase;

wherein said first liquid phase comprises a solution of the compound and said second liquid phase comprises an antisolvent phase; or said first liquid phase comprises an antisolvent and said second liquid phase comprises a solution of the compound;

wherein said method uses a crossflow emulsification apparatus; said crossflow emulsification apparatus (AXF) comprising:

an outer tubular sleeve provided with a first inlet at a first end; a particle outlet; and a second inlet, distal from and inclined relative to the first inlet;

a tubular membrane provided with a plurality of pores and adapted to be positioned inside the tubular sleeve; and

optionally an insert adapted to be located inside the tubular membrane, said insert comprising an inlet end and an outlet end, each of the inlet end and an outlet end being provided with chamfered region; the chamfered region is provided with a plurality of orifices and a furcation plate; and

controlling provision of the first liquid phase to the tubular membrane; and controlling provision of a second liquid phase to the tubular membrane via the plurality of pores to form solid particles of the compound.

10. The method according to claim 9 wherein the method comprises the preparation of solid particles of a compound in crystalline form or amorphous form, or a combination thereof.

11. The method according to claim 10 wherein the method comprises the preparation of solid amorphous particles of a compound.

12. The method according to claim 9 wherein the solution comprises one or more dissolved organic compounds, the one or more organic compounds comprising pharmaceutically active compounds or drugs, bioactive agents, nutraceuticals, polymers and the like.

13. The method according to any one of the preceding claims wherein the compound is of low bioavailability.

14. The method according to claim 12 wherein the solution comprises a pharmaceutically active compound is selected from one or more of antifungal agents, such as, itraconazole fluoconazole, terconazole, ketoconazole and saperconazole; anti-infective agents, such as griseofulvin and griseoverdin; antibiotics, such as, amoxicillin, azithromycin, cephalexin, cefixime, cefoperazone, ceftriaxone, ciprofloxacin, clarithromycin, clavulanic acid, clindamycin, doxycycline, erythromycin, gentamycin, levofloxacin, meropenem, metronidazole, neomycin, norfloxacin, ofloxacin, ornidazole, oxytctracycline, piperacillin, rifampicin, streptomycin, sulbactam, sulfadiazine, tazobactam, tetracycline and tinidazole; anti malaria drugs, such as, atovaquone and artesunate; protein kinase inhibitors, such as, afatinib, axitinib, bosutinib, cetuximab.crizotinib, dasatinib, erlotinib, fostamatinib, gefitinib, ibrutinib, imatinib, zemurasenib, lapatinib, lenvatinib, mubritinib and nilotinib; immune system modulators, such as, cyclosporine; cardiovascular drugs, such as, digoxin and spironolactone; sterols or steroids, such as, betamethasone; ACE inhibitors, such as, captopril, enalapril, ramipril, quinapril, perindopril, lisinopril, and fosinopril; adenohypophyseal hormones; adrenergic antagonists, such as, phentolamine, phenoxybenzamine, tamsulosin, propranolol, atenolol, metoprolol, timolol and acebutolol; adrenocortical steroids; inhibitors of the biosynthesis of adrenocortical steroids; alpha-adrenergic agonists, such as methoxamine, phenylephrine, methyldopa, norepinephrine; alpha-adrenergic antagonists, such as, phentolamine and phenoxybenzamine; analgesics, such as, aspirin and paracetamol;

antipyretics and anti-inflammatory agents, such as, diclofenac, ibuprofen, naproxen and ketoprofen; androgens, local anaesthetics, such as, lidocaine; antiaddictive agents; antiandrogens; antiarrhythmic agents, such as, verapamil and diltiazem; antiasthmatic agents, such as, beclomethasone, budesonide, fluticasone, reproterol, salbutamol and salmeterol; anticholinergic agents, such as, ipratropium and oxybutynin; anticholinesterase agents, such as, donepezil; anticoagulants, such as, dabigatran, rivaroxaban, apixaban, edoxaban and betrixaban; antidiabetic agents, such as, metformin; antidiarrheal agents; antidiuretics; antiemetic and prokinetic agents; antiepileptic agents, such as carbamazepine, gabapentin oxcarbazepine; antiestrogens; antifungal agents; antihypertensive agents, such as, losartan, olmesartan, telmisartan and valsartan; antimicrobial agents; antimigraine agents, such as, zolmitriptan; antimuscarinic agents; antineoplastic agents; antiparasitic agents; antiparkinsons agents, such as, carbidopa and levodopa; antiplatelet agents; antiprogestins; antithyroid agents; antitussives; antiviral agents; antidepressants; azaspirodecanediones; barbiturates; benzodiazepines; benzothiadiazides; beta-adrenergic agonists; beta-adrenergic antagonists; selective adrenergic antagonists; selective agonists; bile salts; butyrophenones; calcium channel blockers; catecholamines and sympathomimetic drugs; cholinergic agonists; cholinesterase reactivators; cognitive enhancers, such as, piracetam; dermatological agents; diphenylbutylpiperidines; diuretics; ergot alkaloids; oestrogens; ganglionic blocking agents; ganglionic stimulating agents; glucocorticoid steroids, such as, dexamethasone and prednisolone; agents for control of gastric acidity and treatment of peptic ulcers; haematopoietic agents; histamines; antihistamine; HMG-CoA reductase inhibitors, e.g. statins, such as, atorvastatin, fluvastatin, lovastatin, pitavastatin, pravastatin, rosuvastatin and simvastatin; 5-hydroxytryptamine antagonists; hypnotics and

sedatives; immunosuppressive agents; laxatives; methylxanthines; monoamine oxidase inhibitors; neuromuscular blocking agents; nutrients or dietary supplements, such as, vitamin B1, vitamin B6 and retinol; organic nitrates; opioid analgesics and antagonists; pancreatic enzymes; phenothiazines; progestins; prostaglandins; agents for the treatment of psychiatric disorders; retinoids; sodium channel blockers; thrombolytic agents; thyroid agents; tricyclic antidepressants; tyrosine kinase inhibitors, such as, axitinib, crizotinib, dasatinib, erlotinib, gefitinib, imatinib, lapatinib, nilotinib, pazopanib, regorafenib, ruxolitinib, sorafenib, sunitinib, vandetanib and vemurafenib; drugs from the group comprising danazol, acyclovir, dapsone, indinavir, lopinavir, nifedipine, nitrofurantion, phentytoin, ritonavir, saquinavir, sulfamethoxazole, valproic acid, trimethoprin, acetazolamide, azathioprine, iopanoic acid, nalidixic acid, nevirapine, praziquantel, rifampicin, albendazole, amitrptyline, artemether, lumefantrine, chloropromazine, clofazimine, efavirenz, iopinavir, folic acid, glibenclamide, haloperidol, ivermectin, mebendazole, niclosamide, pyrantel, pyrimethamine, sulfadiazine, sulfasalazine, triclabendazole, and cinnarizine; and combinations thereof.

15. The method according to claim 14 wherein the pharmaceutically active compound is an antihypertensive agent, such as, telmisartan.

16. The method according to claim 14 wherein the pharmaceutically active compound is an antihypertensive agent in amorphous form, such as, telmisartan.

17. The method according to claim 9 wherein the apparatus includes an insert.

18. The method according to any one of the preceding claims wherein the method is a continuous process.

19. A solid particle prepared by the method according to any one of claims 1 to 18.

20. A solid particle according to claim 19 wherein the particle comprises an active agent.

21. A solid particle according to claims 19 or 20 wherein the solid particles are in crystalline form or amorphous form, or a combination thereof.

22. A solid particle according to any one of claims 19 to 21 wherein the active agent is selected from one or more of antifungal agents, such as, itraconazole fluoconazole, terconazole, ketoconazole and saperconazole; anti-infective agents, such as griseofulvin and griseoverdin; antibiotics, such as, amoxicillin, azithromycin, cephalexin, cefixime, cefoperazone, ceftriaxone, ciprofloxacin, clarithromycin, clavulanic acid, clindamycin, doxycycline, erythromycin, gentamycin, levofloxacin, meropenem, metronidazole, neomycin, norfloxacin, ofloxacin, ornidazole, oxytctracycline, piperacillin, rifampicin, streptomycin, sulbactam, sulfadiazine, tazobactam, tetracycline and tinidazole; anti malaria drugs, such as, atovaquone and artesunate; protein kinase inhibitors, such as, afatinib, axitinib, bosutinib, cetuximab.crizotinib, dasatinib, erlotinib, fostamatinib, gefitinib, ibrutinib, imatinib, zemurasenib, lapatinib, lenvatinib, mubritinib and nilotinib; immune system modulators, such as, cyclosporine; cardiovascular drugs, such as, digoxin and

spironolactone; sterols or steroids, such as, betamethasone; ACE inhibitors, such as, captopril, enalapril, ramipril, quinapril, perindopril, lisinopril, and fosinopril; adenohypophyseal hormones; adrenergic antagonists, such as, phentolamine, phenoxybenzamine, tamsulosin, propranolol, atenolol, metoprolol, timolol and acebutolol; adrenocortical steroids; inhibitors of the biosynthesis of adrenocortical steroids; alpha-adrenergic agonists, such as methoxamine, phenylephrine, methyldopa, norepinephrine; alpha-adrenergic antagonists, such as, phentolamine and phenoxybenzamine; analgesics, such as, aspirin and paracetamol; antipyretics and anti-inflammatory agents, such as, diclofenac, ibuprofen, naproxen and ketoprofen; androgens, local anaesthetics, such as, lidocaine; antiaddictive agents; antiandrogens; antiarrhythmic agents, such as, verapamil and diltiazem; antiasthmatic agents, such as, beclomethasone, budesonide, fluticasone, reproterol, salbutamol and salmeterol; anticholinergic agents, such as, ipratropium and oxybutynin; anticholinesterase agents, such as, donepezil; anticoagulants, such as, dabigatran, rivaroxaban, apixaban, edoxaban and betrixaban; antidiabetic agents, such as, metformin; antidiarrheal agents; antidiuretics; antiemetic and prokinetic agents; antiepileptic agents, such as carbamazepine, gabapentin oxcarbazepine; antiestrogens; antifungal agents; antihypertensive agents, such as, losartan, olmesartan, telmisartan and valsartan; antimicrobial agents; antimigraine agents, such as, zolmitriptan; antimuscarinic agents; antineoplastic agents; antiparasitic agents; antiparkinsons agents, such as, carbidopa and levodopa; antiplatelet agents; antiprogestins; antithyroid agents; antitussives; antiviral agents; antidepressants; azaspirodecanediones; barbiturates; benzodiazepines; benzothiadiazides; beta-adrenergic agonists; beta-adrenergic antagonists; selective adrenergic antagonists; selective agonists; bile salts; butyrophenones; calcium channel blockers; catecholamines and sympathomimetic

drugs; cholinergic agonists; cholinesterase reactivators; cognitive enhancers, such as, piracetam; dermatological agents; diphenylbutylpiperidines; diuretics; ergot alkaloids; oestrogens; ganglionic blocking agents; ganglionic stimulating agents; glucocorticoid steroids, such as, dexamethasone and prednisolone; agents for control of gastric acidity and treatment of peptic ulcers; haematopoietic agents; histamines; antihistamine; HMG-CoA reductase inhibitors, e.g. statins, such as, atorvastatin, fluvastatin, lovastatin, pitavastatin, pravastatin, rosuvastatin and simvastatin; 5-hydroxytryptamine antagonists; hypnotics and sedatives; immunosuppressive agents; laxatives; methylxanthines; monoamine oxidase inhibitors; neuromuscular blocking agents; nutrients or dietary supplements, such as, vitamin B1, vitamin B6 and retinol; organic nitrates; opioid analgesics and antagonists; pancreatic enzymes; phenothiazines; progestins; prostaglandins; agents for the treatment of psychiatric disorders; retinoids; sodium channel blockers; thrombolytic agents; thyroid agents; tricyclic antidepressants; tyrosine kinase inhibitors, such as, axitinib, crizotinib, dasatinib, erlotinib, gefitinib, imatinib, lapatinib, nilotinib, pazopanib, regorafenib, ruxolitinib, sorafenib, sunitinib, vandetanib and vemurafenib; drugs from the group comprising danazol, acyclovir, dapsone, indinavir, lopinavir, nifedipine, nitrofurantion, phentytoin, ritonavir, saquinavir, sulfamethoxazole, valproic acid, trimethoprin, acetazolamide, azathioprine, iopanoic acid, nalidixic acid, nevirapine, praziquantel, rifampicin, albendazole, amitrptyline, artemether, lumefantrine, chloropromazine, clofazimine, efavirenz, iopinavir, folic acid, glibenclamide, haloperidol, ivermectin, mebendazole, niclosamide, pyrantel, pyrimethamine, sulfadiazine, sulfasalazine, triclabendazole, and cinnarizine; and combinations thereof.