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TÍTULO DEL PROYECTO (ACRÓNIMO): Biodisolventes para el desarrollo tecnológico de nuevos sistemas de refrigeración de compresión/absorción húmeda de CO_2 (BIOCOOLING)

TITLE OF THE PROJECT (ACRONYM): *BIO-based solvents for the teChnological develOpment of nOveL wet compressIon/absorptioN CO_2 refriGeration systems (BIOCOOLING)*

Project schedule

	1st SEMESTER						2nd SEMESTER						3rd SEMESTER						4th SEMESTER					
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Tasks O1																								
Tasks O2																								
Tasks O3																								
Tasks O4																								
Tasks O5																								
Meetings																								
	5th SEMESTER						6th SEMESTER						7th SEMESTER						8th SEMESTER					
Month	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Tasks O1																								
Tasks O2																								
Tasks O3																								
Tasks O4																								
Tasks O5																								
Meetings																								

Identification of critical points and mitigation plan.

Critical Points and Risks	Mitigation Plan
Common to all Objectives	
Key personnel are lost to the project	▪ None of the team members is planning to leave or retire within the project. If a key member leaves the project, then a replacement will be appointed. ▪ All areas of the project are covered by more than one expert.
Communication problems among partners	▪ Communication between the groups is already very fluid. ▪ PIs will establish communication methods and meetings to prevent/address possible issues. Regular meetings (1 every 4 months) with Task members and PhD student(s) will be held.
Missing deliverables	▪ The smooth communication between partners allows for quick adjustments to get back on track. PIs or Task leaders may suggest potential re-planning of non-critical activities.
Staff shortage and/or work overload	▪ Continuous search for new incorporations: PhD students hiring with independent contracts (FPU/PIRTU(JCyL)/UVa), Degree or Master's Theses students with collaboration grants.
Objective 1.	
Delays of any kind	▪ Reduction of the number of (T,p,x_{CO2}) conditions measured. ▪ If necessary, TIM equipment for ρ and c_p measurements will be used complementarily to GETEF's to finish the tasks in time (Setaram MicroDSC III; Anton Paar DMA-HPM).
Instability of BBS at high temperatures over long times	▪ Test purity of BBS, as impurities affect their stability. ▪ Purchase new batches (different suppliers can be considered). ▪ Decrease measuring time by testing less (T,p,x_{CO2}) conditions.
Unexpected technical incidences, especially in high-pressure equipment	▪ Partners will work collaboratively, share skills and expertise, and make frequent short-term visits to study and address them. ▪ Repairs and/or recalibrations will be made if needed.
Objective 2.	
Missing EoS parameters of pure BBS	▪ Estimation using predictive models from molecular structure. ▪ Complementary experimental measurements, if needed.
Issues to find model parameters that reproduce all the data simultaneously	▪ Parameter fitting steps will be adapted to these challenging systems. ▪ Other advanced mixing rules will be further investigated.
Failure of the proposed models to correlate all the data with enough accuracy	▪ Convenient empirical correlations will be used to describe the data, which will be effective enough for WCA cycle simulations with the (CO_2 + BBS) mixtures under study.
Objective 3.	
CoPs lower than expected	▪ Influence of operating conditions (maximum cycle ratios, pressures, and temperatures, internal solution heat exchanger efficiencies) will be further investigated.
Efficiency of (CO_2 + BBS) unsuitable for WCA cycles	▪ Other refrigeration cycles will be investigated. ▪ All the data and modeling can be used in other applications, such as CO_2 capture or biofuels.
Objective 4.	
User-defined functions from models are too complex	▪ Instead, simpler polynomial correlations of experimental measured data will be implemented.
Too long simulation time to obtain a converged solution	▪ Coarse mesh generation, fixed boundary conditions, and faster numerical solvers will be used when possible.