Supplementary S3

This supplementary specifies the exact rule set used to exclude off-topic records during title/abstract screening. Rules operate on normalized title, abstract, and author keywords. The term lists below are the complete sets used for matching (regular expressions and case-insensitive).

Decision Logic and Precedence

1) Compute POS_GLOBAL = number of positive anchors that match the normalized text;
2) If POS_GLOBAL ≥ 1 → KEEP;
3) Else (POS_GLOBAL = 0): check strong negatives — sentence-level negatives without co-located positives; journal hints; climate negatives; telecom negatives; materials-strong; or NEG_GLOBAL ≥ 2;
4) If any strong negative condition holds → OFFTOPIC; otherwise, KEEP.

Table S2. Positive anchors and strict-keep terms.

Category	Decision	Match Fields	Terms/Regex (Full Lists)
Positive anchors	KEEP (any match)	title, abstract, author keywords	\bpower system(s)?\b
			\belectric(ity|al)\b
			\b(power|electric|smart)\s+grid(s)?\b
			\btransmission (system|network|grid)\b
			\btransmission (constraint|constraints|congestion|bottle-neck|limit|capacity)\b
			\binterconnector(s)?\b
			\bTSO\b
			\btransmission system operator(s)?\b
			\bN[-–—]1\b
			\bcontingency\b
			\boperational security\b
			\bsecurity of supply\b
			\bredispatch(ing)?\b
			\bcountertrading\b
			\b(topology control|transmission switching)\b
			\bFACTS\b
			\bSTATCOM\b
			\bTCSC\b
			\bUPFC\b
			\bstatic\s+var\s+compensator(s)?\b
			\bPST\b
			\bphase shifting transformer\b
			\bHVDC\b
			\bdynamic line rating\b
			\bDLR\b
			\bLMP\b
			\blocational marginal pricing\b
			\b(flow[-]based|FBMC|market coupling)\b
			\bdemand (side)?response\b
			\bDSR\b
			\bdemand flexibility\b
			\bancillary services\b
			\bFCR\b
			\baFRR\b
			\bmFRR\b
			\bbalancing\b

			\b(BESS|battery energy storage|energy storage)\b
			\bTSO[-/]DSO\b
			\bflexibility services\b
			\bAMI\b
			\badvanced metering infrastructure\b
			\bsmart meter(s)?\b
			\bIEC\s*61850\b
			\bIEC\s*60870-5-104\b
			\bDNP3\b
			\bSCADA\b
			\bPMU(s)?\b
			\bsynchrophasor(s)?\b
			\bWAMS\b
			\bOpenADR\b
			\baggregator(s)?\b
			\bVPP(s)?\b
			\bvirtual power plant(s)?\b
Strict-Keep (DSR-heavy)	KEEP (override negatives)	title, abstract, author keywords	\bdemand side management\b
			\bDSM\b
			\bdemand (side)?response\b
			\bDSR\b
			\bdemand flexibility\b
			\bsmart meter(s)?\b
			\badvanced metering infrastructure\b
			\bAMI\b
			\bOpenADR\b
			\baggregator(s)?\b
			\bvirtual power plant(s)?\b
			\bVPP(s)?\b
			\bancillary services\b
			\bbalancing market\b
			\bcapacity market\b
			\bTSO\b
			\bDSO\b

Table S3. Off-topic cues (apply only when NO positive anchors matched).

Term Cues (Regex)	Journal Hints
\bsemiconductor(s)?\b	\bElectrochimica Acta\b
\bohmic contact(s)?\b	\bJournal of Catalysis\b
\bSchottky\b	\bAngewandte Chemie\b
\bMOSFET(s)?\b	\bChemical Engineering Journal\b
\bSiC\b	\bLangmuir\b
\bGaN\b	\bTalanta\b
\b(GaAs|InGaAs|In[0-9.]+Ga[0-9.]+As|InP)\b	\bJournal of Materials\b
\bcontact resistivit(y|ies)\b	\bMaterials Science\b
\bsheet resistance\b	\bApplied Physics Letters\b
\bmolecular beam epitaxy\b	\bJournal of Applied Physics\b
\bMBE\b	\bIEEE Electron Device Letters\b
\bMOCVD\b	\bJournal of Vacuum Science\b
\bCVD\b	\bApplied Surface Science\b

\bepitax(y|ial)\b	\bACS\b
\bsubstrate temperature\b	\bRSC\b
\bwafer(s)?\b	\bIEEE\s+Transactions\s+on\s+Ultrasonics[,]*\s*Ferroelectrics\s+and\s+Frequency\s+Control\b
\banneal(ing)?\b	\bIEEE\s+Microwave(s)?\s+and\s+Wireless\s+(Technology|Components)\s+Letters\b
\b(deposition|sputter(ing)?|evaporation)\b	\bIEEE\s+Journal\s+of\s+Microwaves\b
\bphotolithograph(y|ic)\b	\bIEEE\s+Transactions\s+on\s+Microwave\s+Theory\s+and\s+Techniques\b
\betch(ing)?\b	\bInternational\s+Journal\s+of\s+RF\s+and\s+Microwave\s+Computer[-]Aided\s+Engineering\b
\belectron beam (evaporator|deposition)\b	\bMicrowave\s+and\s+Optical\s+Technology\s+Letters\b
\bUV-ozone\b	\bIEICE\s+Transactions\s+on\s+Electronics\b
\bHCl\b	\bIEICE\s+Transactions\s+on\s+Communications\b
\b(scanning)?transmission electron microscopy\b	\bIEEE\s+Journal\s+of\s+Oceanic\s+Engineering\b
\bSTEM\b	\bOcean\s+Engineering\b
\bTEM\b	\bJournal of Climate\b
\bSEM\b	\bClimate Dynamics\b
\bHAADF\b	\bQuarterly Journal of the Royal Meteorological Society\b
\bRutherford backscatter spectrometr(y|y)\b	\bBulletin of the American Meteorological Society\b
\bRBS\b	\bWeather and Forecasting\b
\bsecondary[-]ion mass spectrometry\b	\bGeoscientific Model Development\b
\bSIMS\b	\bJournal of Geophysical Research: Atmospheres\b
\bXRD\b	\bAtmospheric Chemistry and Physics\b
\bXPS\b	\bRemote Sensing\b
\bEDS\b	\bOcean Modelling\b
\bEDX\b	\bIEEE\s+Transactions\s+on\s+Wireless\s+Communications\b
\bnanoparticle(s)?\b	\bIEEE\s+Transactions\s+on\s+Communications\b
\bnanostructure(d)?\b	\bIEEE\s+Communications\s+(Letters|Magazine)\b
\bprecipitate(s|d)?\b	\bAd\s+Hoc\s+Networks\b
\bdop(e|ed|ing)\b	\bComputer\s+Networks\b
\bcarrier (concentration|density)\b	\bWireless\s+Networks\b
\bchemistr(y|ical)\b	\bIEEE\s+Transactions\s+on\s+Vehicular\s+Technology\b
\bpolymer(s|ic)?\b	
\bmonomer(s)?\b	
\bcatalys(is|t|ts)\b	
\badsorption\b	
\bdesorption\b	
\bphotocatalys(is|t|tic)\b	
\bsynthesis\b	
\bcrystal(l)?(ine|lography)?\b	
\bspectroscop(y|ic)\b	
\bchromatograph(y|ic)\b	
\bgraphene\b	
\bcarbon nanotube(s)?\b	
\bnanomaterial(s)?\b	
\balloy(s)?\b	
\bcomposite(s)?\b	

\belectrochem(ical|istry)\b
\bsuperconduct(ing|or|ivity)\b
\bJosephson\b
\bfluxon(s)?\b
\bdielectric\s+film\b
\blayered\s+medium\b
\bnonlinear\s+wave(s)?\b
\bfrequency\s+standard(s)?\b
\bvolt(age)?\s+standard(s)?\b
\bbiomed(icine|ical)\b
\bmedic(al|ine)\b
\bclinical\b
\bpatient(s)?\b
\bprotein(s)?\b
\benzyme(s)?\b
\bDNA\b
\bRNA\b
\bcell(s)?\b
\bcancer\b
\btumou?r\b
\bneuro\w+\b
\bpharma(ceutical)?\b
\bdrug(s)?\b
\bwastewater\b
\bwater treatment\b
\bsoil\b
\becology\b
\bbiodiversit(y|ies)\b
\bagricultur(al|e)\b
\bgeochem(ical|istry)\b
\bpetroleum\b
\boil(\s|-)and(\s|-)gas\b
\bfiber(-|\s)?optic(s)?\b
\bpolarizer(s)?\b
\bpolarization\b
\b1550\s*nm\b
\btelecom\s+band\b
\boptical\s+sensor(s)?\b
\bplasmon(ic|s)\b
\bphotonic(s)?\b
\bnano(-|\s)?wire\b
\bmicrowave(s)?\b
\bmm[-\s]?wave(s)?\b
\bmillimeter[-\s]?wave(s)?\b
\bwaveguide(s)?\b
\bwaveguide\s+filter(s)?\b
\bband[-\s]?pass\b|\bbandpass\b|\bband[-\s]?stop\b|\bbandstop\b
\bfilter(s)?\b
\bcombline\b
\bresonator(s)?\b

\bS-parameter(s)?\b
\bscattering parameter(s)?\b
\bSmith\s+chart\b
\bGHz\b
\b(D|Ka|Ku)\s*[-]?band\b
\bmicrostrip\b
\bstripline\b
\bCPW\b
\bcoplanar\s+waveguide\b
\badmittance\s+inverter\b
\btransmission\s+zero(s)?\b
\bknapsack\b
\bNP[-\s]?(hard|complete)\b
\bdynamic\s+programming\b
\bapproximation\s+(algorithm|ratio)\b
\btime\s+complexit(y|ies)\b
\bO\(\s*[mn0-9]
\bgraph\s+(partition|cut)\b
\bmonotonic\s+queue\b
\boceanic\b
\boceanograph(y|ic)\b
\bocean(ic)?\s+acoustic(s)?\b
\breanalysis\b
\bERA[-]?5\b
\bERA[-]?Interim\b
\bECMWF\b
\bCopernicus\b
\bIntegrated Forecasting System\b
\bIFS\b
\bradiosonde(s)?\b
\bPILOT\b
\bMERRA[-]?2\b
\bJRA[-]?55\b
\bGPCP\b
\batmospher(e|ic)\b
\bmeteorolog(y|ical)\b
\bclimate\b
\bprecipitation\b
\bwind (speed|field)s?\b
\bhumidity\b
\bocean (wave|s)\b
\bbuoy(s)?\b
\bsea (surface)?temperature\b
\bglobal reanalysis\b
\bNWP\b
\bcognitive (radio|network)s?\b
\bWSN(s)?\b
\bwireless sensor network(s)?\b
\b(ad[-]?hoc|MANET|VANET)\b
\bMAC (protocol|layer)\b
\bmedium access control\b

\brouting protocol(s)?\b
\bpercolation theory\b
\bspectrum sharing\b
\bprimary user(s)?\b
\bsecondary user(s)?\b
\bQoS\b
\bpacket(s)?\b
\bcollision(s)?\b
\bretransmission(s)?\b
\bchannel (access|assignment)\b
\bTDMA\b
\bCDMA\b
\bCSMA\b
\bOFDM\b
\bMIMO\b
\bbeamforming\b
\bPHY\b
\blink[-]?layer\b
\b5G\b
\bLTE\b
\bIoT\b
\bScalable\s+Video\s+Coding\b
\bhome\s+network(s)?\b
\b(multimedia|video)\s+(stream(ing)?|content)\b
\bbandwidth\s+estimat(e|ion)\b
\breconfigurable\s+intelligent\s+surface(s)?\b
\bintelligent\s+reflecting\s+surface(s)?\b
\bRIS\b
\bIRS\b
\bmacro\s+diversit(y|ies)\b
\bSTBC(s)?\b
\bspace[-]time\s+block\s+code(s)?\b
\brelative\s+neighborhood\s+graph(s)?\b
\bRNGs?\b
\btopology\s+control\b
\bPoisson\s+point\s+process(es)?\b
\bund(er)?water\s+acoustic(s)?\b
\bUWA\b
\bnetwork\s+coding\b
\bLDPC\b
\bbelief\s+propagation\b
\bGalois\s+field\b
\bdecode[-\s]?and[-\s]?forward\b
\bDF\s+relay(ing)?\b
\bopportunistic\s+scheduling\b
\boutage\s+(probabilit(y|ies)|behaviou?r)\b
\bvehicular\s+(network|communication|technology)\b
\bpiezoelectric\b
\bferroelectric\b
\bperovskite\b
\bceramic(s)?\b

\bpermittivit(y|ies)\b
\bdielectric(s)?\b
\b(Bi0\.5Na0\.5)(0\.94)?Ba0\.06TiO3\b
\bBNBT6\b
\bBNBT\b
\bBi0\.5Na0\.5TiO3\b
\brelaxor\b
\bpiezoelectric coefficient(s)?\b