

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
10 August 2023 (10.08.2023)



(10) International Publication Number
WO 2023/150037 A1

(51) International Patent Classification:
G01N 30/86 (2006.01) *B01D 15/38* (2006.01)
G01N 30/88 (2006.01)

(21) International Application Number:
PCT/US2023/011409

(22) International Filing Date:
24 January 2023 (24.01.2023)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/306,971 04 February 2022 (04.02.2022) US

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(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE,
KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU,
LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG,
NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS,
RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(54) Title: ADVANCED DATA-DRIVEN MODELING FOR PURIFICATION PROCESS IN BIOPHARMACEUTICAL MANU-
FACTURING

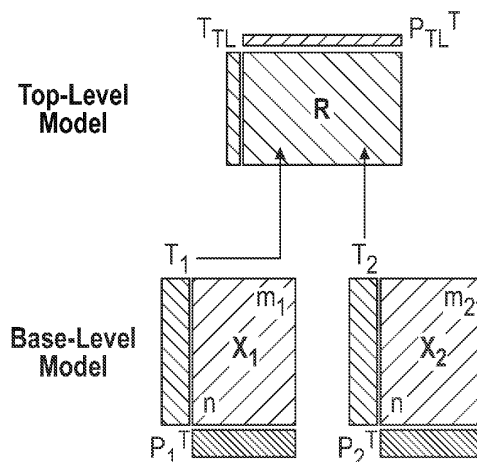


FIG. 1

(57) Abstract: An exemplary method for assessing performance of an instance of a chemical process having a series of consecutive phases includes: obtaining data related to the instance of the chemical process; and evaluating, based on the data related to the instance of the chemical process, the performance of the instance of the chemical process using a plurality of performance thresholds, wherein the plurality of performance thresholds is obtained by training a hierarchical model based on one or more historical instances of the chemical process, and wherein the hierarchical model includes: a plurality of batch-evolution models (BEMs) at a first level of a hierarchy; a plurality of batch-level models (BLMs) at a second level above the first level of the hierarchy; and an overall performance model at a third level at a third level above the second level of the hierarchy.

[Continued on next page]

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*