

## **Damian AXENTE**

### **Lista selectivă a lucrărilor (List of selected papers)**

D.Axente and O.Piringer, "The kinetics of the  $^{15}\text{N}/^{14}\text{N}$  isotopic exchange between nitric oxide and nitric acid", *J.Inorg.Nucl.Chem.*, 33, 665 (1971).

D.Axente and O.Piringer, "The determination of the activation energy of the  $^{15}\text{N}/^{14}\text{N}$  isotopic exchange reaction between nitric oxide, nitrogen dioxide and nitric acid", *J.Inorg.Nucl.Chem.*, 34, 847 (1972).

D.Axente and O.Piringer, "The influence of the hydrogen and nitrate ions on the isotopic exchange reaction between nitric oxide and nitric acid", *J.Inorg.Nucl.Chem.*, 34, 1819 (1972).

D.Axente, G. Lacoste and J.Mahenc, "The kinetics of the  $^{15}\text{N}/^{14}\text{N}$  isotopic exchange between nitric oxide and nitric acid", *J.Inorg.Nucl.Chem.*, 36, 2857 (1974).

D.Axente, O.Piringer, M.Abrudean, A.Bâldea, N.Palibroda, "The kinetics of the  $^{15}\text{N}/^{14}\text{N}$  isotopic exchange between nitric oxide and nitric acid", *J. Radioanalytical Chem.*, 30, 233 (1976).

M.J.Akhtar, D.Axente, F.T.Bonner, "Nitrogen isotopic exchange between nitric and nitrous acids", *J.Chem.Phys.*, 71,9, 3570 (1979).

A.Bâldea, D.Axente, M.Abrudean, N.Palibroda, I.Vancea, "Kinetics of the reaction between nitric oxide and graphite", *Rev. Roum. Chim.*, 24, 5, 764 (1979).

D.Axente, V.Mercea, M.Abrudean, A.Bâldea, "Catalytic purification of the gas mixture for pulsed TEA  $\text{CO}_2$  laser", *Rev. Chim. (Bucharest)*, V. 34, 321-324 (1983).

A.Bâldea, M.Abrudean, D.Axente, I.Vancea and N.Palibroda, "Conversion of nitric oxide to carbon dioxide for  $^{18}\text{O}$  isotopic analysis by mass-spectrometry", *Rev.Roum. de Chim.*, 24, 5, 769 (1979).

D.Axente, T.Fodor, "The influence of the auxiliary water and of nitric acid flow-rate about  $^{15}\text{N}$  separation in nitrox system", *Isotopenpraxis*, 5, 7, 267-269 (1969).

D.Axente, M.Abrudean and A.Bâldea, "Adsorption on Romanian natural clinoptilolite", *Zeolites*, Vol. 3, 259-260 (1983).

D.Axente, M.Abrudean, A.Bâldea, I. Calancea, "Phosphorus and nitrogen utilization coefficients determination using  $^{18}\text{O}$  and  $^{15}\text{N}$  double labelled ammonia phosphate", *ESNA, Newsletter*, 12-15 (1980).

M.Abrudean, A.Bâldea, D.Axente, "Hydrogen recovery from hydrogen-nitrogen mixture by selective adsorption on natural clinoptilolite", Zeolites, Vol. 5, 211-212 (1985).

D. Axente, M.Abrudean, A. Bâldea, L. Calancea, D.Stroescu, "The utilization of  $^{18}\text{O}$  labelled potassium phosphate in studies concerning fertiliser phosphorus assimilation by plante", Isotopenpraxis 15, 10, 312 (1979).

M.Abrudean, D.Axente, A.Bâldea, M.Jalobeanu, "A model of calculation for fluid flow-rate and concentration for  $^{18}\text{O}$  separation plant by  $\text{NO}$ ,  $\text{NO}_2$  -  $\text{H}_2\text{O}$ ,  $\text{HNO}_3$  isotopic exchange", Rev. Chim. (Bucharest), 29, 10, 953-955 (1978).

A.Bâldea, D.Axente, M.Abrudean, D.Stroescu, "The method for  $\text{H}_3\text{P}^{18}\text{O}_4$ ,  $(\text{NH}_4)_2\text{HP}^{18}\text{O}_4$  and  $\text{KH}_2\text{P}^{18}\text{O}_4$  production", Rev. Chim (Bucharest), 29, 5, 420-421 (1978).

M.Abrudean, D.Axente, A.Bâldea, "Enrichment of  $^{15}\text{N}$  and  $^{18}\text{O}$  by chemical exchange reaction between nitrogen oxides ( $\text{NO}$ ,  $\text{NO}_2$ ) and aqueous nitric acids", Isotopenpraxis 17, 11, 377 (1981).

A.Bâldea, D.Axente, M.Abrudean, V. Bidian, "A generator of oxygen enriched air operating by selective adsorption of air components on natural clinoptilolite", Rev. Chim (Bucharest), 34, 10, 883-886 (1983).

D.Axente, A.Bâldea, M.Abrudean, I.Roman, V.Bidian, "Sulphur dioxide and carbon dioxide adsorption on Romanian natural zeolites", Rev. Chim (Bucharest), 31, 7, 656-658 (1980).

A.Bâldea, D.Axente, M.Abrudean, M.Leucă, "Determination of water adsorption capacities of Romanian molecular sieves in flow conditions", Rev. Chim (Bucharest), 32, 7, 645-648 (1981).

M.Chiriac, V.Mercea, M.Abrudean, D.Axente, Z.Moldovan, " $\text{CF}_3\text{I}$ ,  $\text{CF}_3\text{Br}$  and  $\text{CF}_3\text{D}$  production and purification for  $^{13}\text{C}$  and deuterium laser isotope separation", Rev. Chim (Bucharest), 33, 11, 1018-1020 (1982).

D.Axente, A.Bâldea, M.Abrudean, I.Roman, V.Bidian, "Selective nitrogen and oxygen adsorption from air on Romanian natural zeolites", Rev. Chim (Bucharest), 31, 10, 972-975 (1980).

A.Bâldea, D.Axente, M.Abrudean, S.Lungu, "The behaviour of molecular sieves for different moisture air drying", Rev. Chim (Bucharest), 36, 5, 419-422 (1985).

D.Axente, M.Abrudean, A.Bâldea, V.Bidian, "Production of molecular nitrogen by selective adsorption of air components on natural clinoptilolite", Rev. Chim (Bucharest), 36, 8, 731-734 (1985).

D.Axente, T.Fodor, V.Mercea, M.Peculea, "Installation expérimental pour la séparation isotopique de l'azote - 15 par échange isotopique entre NO, NO<sub>2</sub> et HNO<sub>3</sub>", Rev. Roum. de Chim., 13, 707-712 (1968).

M.Abrudean, D.Axente, A.Bâldea, "Reactor for continuous cracking of the nitric oxide in an electric discharge", Rev. Chim.,(Bucharest) 26, 6,485-488 (1975).

D.Axente, "Methods for 15N separation", Studii și Cercetări de Chimie, 19, 4, 395-415 (1971).

D.Axente, "Isotopic exchange reactions used for 15N separation", Studii și Cercetări de Chimie, 17, 2, 79-205 (1969).

A.Bâldea, D.Axente, M.Abrudean, V.Mercea, C.Bratu, "Thermal decomposition of ammonium fluoride", J. Radioanalytical and Nuclear Chem., 111, 2, 423-428 (1987).

D. Axente, M.Abrudean, A.Bâldea, "Continuous production of uranium hexafluoride", Rev. Chim.,(Bucharest), 38, 1, 33-38 (1987).

M.Gligan, M.Abrudean, A.Bâldea, D.Axente, "Catalytic reactor for CO-O<sub>2</sub> recombination in a high repetition rate TEA CO<sub>2</sub> laser", , Rev. Chim. (Bucharest) 38, 6, 526-528 (1987)

I.Chiș, A.Ciura, V.Drăgănescu, D.Drăgulinescu, D.Grigorescu, C.Grigoriu, M.L.Pascu, V.G.Velculescu, M.Abrudean, D.Axente, A.Bâldea and M.Gligan, "Design and performance a high repetition rate TEA CO<sub>2</sub> laser", J. Phys. E. Sci. Instrum., 21, 393-396 (1988)

M.Abrudean, D.Axente, A.Bâldea, "Fluorine production by electrolyse", Rev. Chim. (Bucharest) 40,56, 401-403, (1989).

D.Axente, A.Bâldea, M.Abrudean, "Isotope separation by chemical exchange", Proceedings on International Symposium on Isotope Separation and Chemical Exchange Uranium Enrichment, Tokyo, 29 Oct. - 1. Nov. (1990).

D.Axente, A.Bâldea, M.Abrudean, "Production of standard mixtures of chlorine at 50-60 ppm and of hydrogen sulphide at 200-300 ppm in nitrogen", Rev. Chim. (Bucharest) 42, 1-3, 102-105 (1991).

D.Axente, M.Abrudean, A.Bâldea, "Separation of isotopes 15N, 18O, 10B, 13C by isotopic exchange", Ed. Casa Cărții Știință, Cluj-Napoca, Romania (1994).

D.Axente, M.Abrudean, A.Bâldea, "Nitrogen isotope exchange between nitric oxide and nitric acid", J. Radioanal. Nucl. Chem., 207, 1, p.163 (1996).

A.Bâldea, M.Abrudean, D.Axente, S.Dronca, "Synthesis of 15N labelled compounds", Acta Geologica Hungarica, 30, 4 (1996).

- D. Axente, M. Abrudean, A. Bâldea, "The rate of  $^{15}\text{N}/^{14}\text{N}$  isotope exchange in  $\text{NO}-\text{HNO}_3$  system at different nitric oxide pressures", *J. Radioanal. Nucl. Chem.*, 222, 1-2, p. 149 (1997).
- S. Dronca, D. Axente, A. Bâldea, M. Abrudean, "Adsorption of carbon dioxide in the solution of Di-n-butylamine in nonaqueous solvent", *Rev. Chim.*, 49, 11, 775 (1998).
- M. Chiriac, D. Axente, N. Palibroda, "The synthesis of (1,3,6,7 -  $^{15}\text{N}$ , 8 -  $^{13}\text{C}$ ) Adenine", *J. Labelled Compounds and Radiopharmaceuticals*, 42, 377-385 (1999).
- D. Axente, A. Bâldea, C. Teacă, M. Abrudean, R. Horga, "  $^{15}\text{N}$  separation in Nitrox system at different pressures", *J. Radioanal. Nucl. Chem.*, 240, 3, 987-989 (1999)
- M. Gligan, A. Rădoi, S. Dronca, C. Bidian, D. Radu, D. Axente, "Experimental plant for oxygen isotopes separation by nitric oxide distillation at low temperatures", *Rev. Chim.*, 48, 4, 335-339 (1997)
- A. Rădoi, M. Gligan, S. Dronca, D. Axente, "Experimental plant for  $^{13}\text{C}$  enrichment by carbon monoxide distillation at low temperatures", *Rev. Chim.*, 50, 3, 221-225 (1999).
- D. Axente, M. Nomura, Y. Fujii, "The isotope effect a gadolinium amalgam system", Intern. Conf. on Stable Isotopes and Isotopes Effects, 20-25 June, Carry le Rouet, France (1999).
- S. Dronca, D. Axente, A. Bâldea, C. Teacă, " Studiul separării  $^{13}\text{C}$  prin schimb izotopic în sistemul  $\text{CO}_2$  - DNBA caramat în metanol" *Rev. Chim.* 51, 1, 65 (2000)
- R. Horga, D. Axente, A. Pamula, M. Chiriac, A. Bâldea, C. Fătu, M. Leucă, I. Ilieș, D. Ursu, C. Floare, "Îmbogățirea  $^{235}\text{U}$  prin schimb chimic în sistemul  $\text{U}^{4+}-\text{UO}_2^{2+}$  utilizând rășini schimbătoare de ioni ", *Rev. Chim.*, 52, Nr. 7-8, p. 377-381 (2001).
- Paula Raica, D. Axente, "Enrichment of  $^{13}\text{C}$  by chemical exchange between  $\text{CO}_2$  and amine carbamate," *J. of Radioanalytical and Nucl. Chem.*, 251, 3, 443, (2002).
- Mihaela Pavel, Damian Axente, "Recuperarea aurului din soluții de cloruri cu ajutorul rășinii schimbătoare de ioni selective Ionac-SR3", *Rev. Chim.*, 54, Nr. 1, p. 65, (2003)
- Yves Barré, Damian Axente, *Progrès en séparation isotopique d'éléments légers*, *L'Actualité Chimique*, 8-9 Aut-Sept, (2003)
- Mihaela Pavel, Damian Axente, "Recuperarea aurului din soluții de cianuri cu ajutorul ioniților comerciali", *Rev. Chim.*, 55, 2, 86 (2004)
- Ecaterina Stela Drăgan, Ecaterina Avram, Damian Axente, Cristina Marcu, "Ion exchange resin III", *J. Polym. Sci. Chem.*, 42, 2451-2461 (2004)
- Paula Raica, D. Axente, "Modeling and analysis of uranium isotope enrichment by Chemical exchange" , *J. Radioanalytical Nucl. Chem.*, 262, 2, 403 (2004).

D. Axente, Cristina Marcu, Ecaterina Stela Drăgan, Ecaterina Avram, “Adsorbția U(VI) din soluții clorhidrice pe rășini schimbătoare de anioni”, Rev. Chim., 56, 8, 825-829, (2005)

Paula Raica, Damian Axente, “Analysis of  $^{235}\text{U}$  enrichment by chemical exchange in U(IV) – U(VI) system on anionite”, Separation Science and Technology, 42, 5, (2007), 1065-1077.

Damian Axente, Gristina Marcu, Ecaterina Stela Drăgan, Ecaterina Avram, “Determinarea capacității de adsorbție a anionitului Dowex-Marathon pentru clorocomplecșii de Ti(IV) și Fe(III)”, Rev. Chim., 57, 11, (2006), 1079-1081.

Martin Kaucsar, Damian Axente, Viorel Cosma, Aurel Bâldea, “Utilizarea logicii fuzzy pentru controlul unei instalații de separare a izotopului  $^{15}\text{N}$ ”, Rev. Chim., 58, 8, (2007), 809-815.

Damian Axente, Cristina Marcu, Ancuța Mureșan, Martin Kaucsar, Ioan Mișan, Gabriel Popenețiu, Nicolae Gligan, Gabriela Cristea, „The  $^{14}\text{N}$  and  $^{15}\text{N}$  simultaneous separation by  $^{15}\text{N}/^{14}\text{N}$  exchange in NO, NO<sub>2</sub>-HNO<sub>3</sub> system under pressure”, Isotopes in Environmental and Health Studies, 46: 242-248, (2010)

Damian Axente, Ancuța Balla, Cristina Marcu, „Reduction of U(VI) adsorbed on anion exchange resin with V(III) in acid solution”, J Radioanal Nucl Chem, 288: 717-721, (2011)

Ancuța Balla, Cristina Marcu, Damian Axente, Gheorghe Borodi, Diana Lazăr, „Catalytic reduction of sulfuric acid to sulfur dioxide”, Cent Eur J Chem, 10: 1817-1823, (2012)

Cristina Marcu, Damian Axente, Ancuța Balla, „Kinetic and thermodynamic studies of U(VI) adsorption using Dowex-Marathon resin”, J Radioanal Nucl Chem, 305: 623-630, (2015)

Cristina Marcu, Damian Axente, Ancuța Balla, „Study of Fe(III) adsorption onto Dowex-Marathon resin, as a rate determining step of the U(IV) oxidation in  $^{235}\text{U}$  enrichment column”, J Radioanal Nucl. Chem., 308: 179-185, (2016)

Ancuța Balla, Damian Axente, Cristina Marcu, „Sizing of a catalytic reactor for sulfuric acid reduction to sulfur dioxide based on the activation parameters of  $\text{SO}_3 \rightarrow \text{SO}_2$  reaction”, Rev Chim (Bucharest), 66, 556-561, (2015)

Damian Axente, Ancuța Balla, Cristina Marcu, “The energy consumption for thermos-catalytic conversion of sulfuric acid into sulfur dioxide for its recycling in the  $^{15}\text{N}$  production plant”, Rev Chim (Bucharest) 67, 8, 1551 – 1554, (2016)

Damian Axente, Ancuța Balla, Stefan Bugeac, Mihai Gligan, Cristina Marcu, „The calculus of the separation parameters at pressure of the primary separation column of the  $^{15}\text{N}$  production plant”, Rev. Chim.(Buchares) 68, 11, 2533-2537(2017)

### **Lista brevetelor (List of Patents):**

Metodă și instalație pt. extragerea continuă a produsului unei instalații de separare a izotopului  $^{15}\text{N}$  sub formă de  $^{15}\text{NH}_3$ , D. Axente, M. Abrudean, A. Bâldea, F. Domșa, Brevet Nr. 64195/31 Mai, 1975

Metodă de îndepărtare a conținutului de  $\text{SO}_2$  și  $\text{CO}_2$  din aerul industrial, Bâldea, M. Abrudean, D. Axente, A. Bidian, I. Roman, Brevet Nr. 78635/26 Nov.1981

Producerea de hexafluorură de uranium, M. Abrudean, D. Axente, A. Bâldea, C. Bratu, O. Popa, I. Miu, Gh. Văсарu, Brevet Nr. 130285/Nov.1987

Tratarea specială a cilindrilor de oțel inoxidabil pt. stocarea amestecurilor standard de clor la concentrația de 50-60 ppm în azot și hidrogen sulfurat la concentrația de 200-300 ppm în azot, D. Axente, A. Bâldea, M. Abrudean, Brevet de Invenție Nr. 146615/1991

Metodă și instalație pentru reciclarea dioxidului de sulf și oxigenului într-o instalație pentru producerea izotopului  $^{15}\text{N}$  prin schimb isotopic în sistemul  $(\text{NO}, \text{NO}_2)(\text{g}) - \text{HNO}_3(\text{s})$

D. Axente, Balla Ancuța, Marcu Cristina, Gegely Stefan, Brevet de Invenție Nr.131314/2018

Catalizator de trioxide de fier granule pentru conversia termo-catalitică a acidului sulfuric la dioxid de sulf, D. Axente, Balla Ancuța, Marcu Cristina, Nr. Cererii de brevet: a 2016 00023/2016.

Metodă și sistem de control continuu, automat a debitului de dioxid de sulf în refluxorul coloanei de separare a izotopului  $^{15}\text{N}$  prin schimb isotopic în sistemul oxizi de azot – soluție de acid azotic, Gergely Stefan, Kaucsar Martin, Axente Damian Alexandru, Balla Ancuța Carmen, Marcu Mariana Cristina, Nr. Cererii de brevet: a 2018 00537/2018