

društvene vijesti



Predstavljamo vam...

Međunarodni izdavački savjet

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Curriculum Vitae

Ivan Wichterle was born in Prostějov, Czech Republic (former Czechoslovakia) on 9 September 1939. Thanks to numerous school reforms, he completed secondary school at the age of 16. At the age of 21, he graduated from the Prague Institute of Chemical Technology, specialising in inorganic technology. He continued with a doctoral study at the Czechoslovak Academy of Sciences under the supervision of Professor Eduard Hála, an extraordinary scientist and inspiring personality for his students. Under these circumstances and with enormous luck in experimenting, Ivan Wichterle completed his PhD thesis in physical chemistry in two years.

In 1964, Hála's group, dealing mainly with chemical thermodynamics, moved from the Institute of Physical Chemistry to a more technologically oriented and newly established Institute of Chemical Process Fundamentals (ICPF) of the Czechoslovak Academy of Sciences in Prague–Suchdol. Dr Wichterle continued the experimental research of vapour–liquid equilibria (VLE) and data processing. He passed one of the first available courses in programming in 1962 and wrote a number of ground-breaking algorithms and programs for correlating physico-chemical data. These activities resulted in the world's first collection of correlated VLE data, published as a book by Pergamon Press (London) in 1968.

As a postdoc, he received a fellowship from the Department of Chemical Engineering at Rice University in Houston (among the top ten US universities back then), headed by no less than Professor Riki Kobayashi (1969–1970). The task given to Wichterle was experimental determination of vapour–liquid equilibria at very low temperatures and high pressures in systems of light paraffins. For this purpose he “inherited” an old apparatus which was out of use for years and had to be modified. However, the experiments carried out in the vicinity of the critical point of methane (190 K, 45 bar) constantly exhibited a behaviour very different than expected. At the beginning, those “deviations” were believed to be measurement errors, and all parts of the instrument were carefully recalibrated and rechecked, but the results remained the same. This is when Dr Wichterle came up with the idea that this behaviour was in fact natural due to a singularity at the critical point. He proved his hypothesis experimentally. This finding has had a great impact on the design of separation units working in the critical region. Dr Wichterle's discovery was the highlight of his one-year study abroad, and later became the subject of his DrSc thesis (a degree higher than the PhD at the time). Unfavou-

Životopis

Ivan Wichterle rođen je 9. rujna 1939. u Prostějovu, Republika Češka. Zahvaljujući brojnim reorganizacijama školstva u tadašnjoj Čehoslovačkoj, srednju školu završio je sa 16 godina. U dobi od 21 godine diplomirao je na Praškom Institutu za kemijsku tehnologiju specijalizirajući se za anorgansku tehnologiju. Nastavio je doktorski studij na Čehoslovačkoj akademiji znanosti pod mentorstvom prof. dr. sc. Eduarda Hálae, znanstvenika izvanredne osobnosti koja je uvijek nadahnjivala njegove studente. U takvim okolnostima i uz ogromnu sreću u eksperimentiranju, Ivan Wichterle je unutar dvije godine završio svoj doktorski rad u području fizikalne kemije.

Godine 1964. istraživačka skupina E. Hálae, koja se bavila pretežito kemijskom termodinamikom, preselila je iz Instituta za fizikalnu kemiju u više tehnologijski usmjeren, novoutemeljeni Institut za kemijske procese (ICPF) Čehoslovačke akademije znanosti u Pragu (Suchdol). Dr. Wichterle je nastavio eksperimentalna istraživanja u području fazne ravnoteže kapljevine–para (VLE), uz obradu i pohranjivanje podataka VLE-a.

Položio je 1962. jedan od prvih ondašnjih tečajeva programiranja, da bi poslije razvio velik broj izvrsnih algoritama i programa za koreliranje eksperimentalnih fizikalno-kemijskih podataka. Te aktivnosti rezultirale su zbirkom koreliranih podataka VLE-a, prvom te vrste u svijetu, objavljenim u knjizi u izdanju Pergamon Pressa (u Londonu) 1968. godine.

Tijekom postdokorskog usavršavanja (1969. – 1970.) bila mu je dodijeljena stipendija Odjela za kemijsko inženjerstvo Sveučilišta Rice u Houstonu, jednom od 10 vodećih sveučilišta u SAD-u, kojim je tada rukovodio prof. dr. sc. Riki Kobayashi. Zadaća dr. Wichterlea bilo je eksperimentalno određivanje ravnoteža kapljevine–para pri niskim temperaturama i visokim tlakovima u sustavima parafina niskih molekularnih masa. Pritom se koristio “naslijeđenim” starim uređajem koji je godinama bio izvan uporabe, pa ga se moralo prilagoditi za tu svrhu. Međutim svi eksperimenti izvedeni u blizini kritične točke metana (190 K, 45 bar), uporno su pokazivali različito ponašanje od očekivanoga. U početku se za ta “odstupanja” vjerovalo da su pogreške mjerenja, pa su svi dijelovi uređaja opetovano pažljivo podešavani i provjereni, no rezultati su ostali jednaki. Dr. Wichterle je tada razumno pretpostavio da je to “neobično” ponašanje zapravo prirodno ponašanje u blizini kritične točke. Svoju hipotezu dokazao je poslije eksperimentalno, a to otkriće imalo je i ima veliki utjecaj na dizajniranje separacijskih jedinica u kritičnom području. Rezultati Wichterleova istraživanja u inozemstvu postali su poslije osnova teze njegove disertacije za stjecanje doktorata znanosti (stupnja koji je u to vri-

rable political circumstances, however, delayed his promotion until 1989.

Having returned from the USA, Dr Wichterle introduced the research of high-pressure VLE to the ICPF. Since that time, several generations of experimental equipment and new methods had been developed, including the famous capillary sampling technique (patented), which – due to its simplicity and reliability – eliminated rather sophisticated and expensive equipment parts. Of course, numerical correlations and thermodynamic computations were the integral part of those studies. Wichterle also continued to measure VLE at normal and reduced pressures in binary and multicomponent systems. Over the last decade he has conducted demanding experimental studies of VLE accompanied by chemical reaction. Together with his wife Dr Grozdana Bogdanić, with whom he shares many affinities, Dr Wichterle has been investigating VLE in systems containing polymers, both experimentally and theoretically.

In 1970, Dr Wichterle started to computer process a VLE bibliographic database, which was more of a hobby than a job to him. Back then, the database included 2600 entries and could no longer be processed manually. Dr Wichterle used a special nomenclature to convert complex names of all relevant chemicals into maximum 6-digit mnemonic and easy-to-understand codes. These input data with references would then be processed using a purpose-built software. The first volume of this unique bibliography (1053 pages) was published by Elsevier in 1973 and was followed by four triennial book supplements. Personal computers brought better storage, user-friendly software, and publishing options. The bibliographic job continued in cooperation with Professor Henry V. Kehiaian (Université de Paris). The database was supplemented with numerical data of 6000 correlated systems based on almost 14000 literature references. This activity was crowned by two volumes of the Landolt-Börnstein Encyclopaedia (2008), including a CD-ROM with the database.

Dr Wichterle has published 27 books or textbooks, 100 original papers (92 listed in WoS), 15 review articles, three patents, 37 research reports, 98 presentations at international conferences, and uncountable referee/review reports. According to the Web of Science (WoS), his production has been cited 850 times and his *h*-index is 15.

jeme bio viši od doktorskog rada). Nepovoljne političke okolnosti, na žalost, odgodile su njegovu promociju sve do 1989. godine.

Po povratku iz SAD-a dr. Wichterle uvodi u ICPF sustavna eksperimentalna istraživanja fazne ravnoteže kapljevinā–para pri visokim tlakovima. Od tada do danas razvijeno je mnoštvo eksperimentalne opreme i novih eksperimentalnih metoda, uključujući i patentiranu tehniku kapilarnog uzorkovanja kojom su – zbog jednostavnosti i pouzdanosti – sofisticirani i skupi dijelovi opreme postali suvišni. Koreliranje podataka i termodinamički proračuni smatraju se sastavnim dijelom tih istraživanja. Dr. Wichterle je nastavio s mjerenjima VLE-a pri normalnim i reduciranim tlakovima, kako u binarnim tako i u višekomponentnim sustavima. Tijekom posljednjih deset godina vodio je zahtjevna eksperimentalna istraživanja ravnoteže kapljevinā–para višekomponentnih sustava praćenih kemijskim reakcijama. Zajedno sa suprugom dr. Grozdanom Bogdanić, s kojom dijeli mnoge interese i sličnosti u istraživačkim pristupima, dr. Wichterle istražuje i VLE-sustave koji sadrže polimere, i eksperimentalno, i teorijski.

Godine 1970. dr. Wichterle je započeo izradu bibliografske baze podataka VLE-a, što mu je bio više hobi negoli posao. U to je vrijeme baza podataka već uključivala 2600 upisa, što je preraslo mogućnosti ručne obrade. Da si olakša posao, dr. Wichterle je izumio posebno nazivlje za složena imena svih relevantnih kemijskih supstancija, pretvorivši ih u mnemotehnički lako razumljive kodove od najviše šest znamenki. Tim trikom, kao i programom razvijenim u tu svrhu bio je olakšan unos podataka o faznoj ravnoteži zajedno s pripadajućim literaturnim referencijama. Prvi svezak te jedinstvene bibliografije (1053 stranica) objavljen je u izdanju Elseviera 1973. i nakon toga su uslijedila još četiri trijevalna dodatka knjizi. Osobna računala omogućila su poboljšanu podršku za pohranu podataka, programe za laganu uporabu i opcije objavljivanja. Bibliografski posao nastavljen je u suradnji s prof. dr. sc. Henryjem V. Kehiaianom (Sveučilište u Parizu). Baza podataka pridodani su brojni podaci 6000 koreliranih sustava temeljenih na gotovo 14000 literaturnih referencija. Ta djelatnost okrunjena je s dva sveska Landolt-Börnsteinove enciklopedije (2008), uključujući CD-ROM s bazom podataka.

Dr. Wichterle je objavio ukupno 27 knjiga i udžbenika, 100 izvornih članaka (od kojih su 92 indeksirana u bazi *Web of Science*, WoS), 15 preglednih članaka, tri patenta, 37 istraživačkih izvještaja, 98 priopćenja na međunarodnim skupovima i nebrojena recenzentska/evaluatorska izvješća. Znanstveni odjek objavljenih radova ogleda se, prema WoS-u, u ukupno 850 citata i njegovom *h*-indeksu koji je 15.

Popis odabranih publikacija

List of selected publications

1. *I. Wichterle, J. Linek, E. Hála*, Vapour–Liquid Equilibrium Data Bibliography. Elsevier, Amsterdam, 1973, 1053 pp.; Supplement I, 1976, 333 pp.; Supplement II, 1979, 286 pp.; Supplement III, 1982, 322 pp.; Supplement IV, 1985, 274 pp.
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3. *G. Bogdanić, I. Wichterle, A. Erceg Kuzmić*, Collection of Miscibility Data and Phase Behavior of Binary Polymer Blends Based on Styrene, 2,6-Dimethyl-1,4-Phenylene Oxide and of Their Derivatives. 124 pp., Research Signpost, Trivandrum, 2010.
4. *I. Wichterle, Z. W. Salsburg, P. S. Chappellear, R. Kobayashi*, Unexpected Vapor–Liquid Equilibria Behavior in the Critical Region and Some Theoretical Implications of Critical Exponents. *Chem. Eng. Sci.* **26** (1971) 1141–1144.
5. *I. Wichterle, P. S. Chappellear, R. Kobayashi*, Determination of Critical Exponents from Measurements of Binary Vapor–Liquid Equilibrium in the Neighborhood of the Critical Line. *J. Comput. Physics* **7** (1971) 606–620.
6. *Z. Wagner, I. Wichterle*, High-Pressure Vapour–Liquid Equilibrium in Systems Containing Carbon Dioxide, 1-Hexene, and n-Hexane. *Fluid Phase Equilib.* **33** (1987) 109–123.
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10. *J. Pavlíček, A. Andresová, G. Bogdanić, I. Wichterle*, Vapour–liquid equilibria in binary and ternary systems composed of 2,3-dimethylbutane, diisopropyl ether, and 3-methyl-2-butanone at 313.15, 323.15 and 313.15 K. *Fluid Phase Equilib.* **344** (2013) 59–64.