Personal account of Imre Bakonyi (Wigner Research Centre for Physics) on the Early Days of Rapid Quenching in Hungary

First news in Hungary about rapid quenching: At my undergraduate solid state physics course at Eötvös University (Budapest) in 1970-71, the lecturer on crystallography mentioned the Brela conference (1969/70) where reports on non-crystalline/amorphous alloys obtained by rapid quenching were presented

Early 1970s: Theoretician Csaba Hargitai (Central Research Institute for Physics, Hung. Acad. Sci., Budapest) became interested in the theory of rapid solidification from the melt (along the lines of Turnbull's related activity).

By giving seminars on the topic, Hargitai convinced the experimentalists of the Metals Research Department to start research in this field, just when I joined the department (1976).

The largest Hungarian state company for iron and steel production (Csepel Metal Works) supported this research until the political changes around 1990.

Initial studies have been made on metallic glass ribbons purchased from Allied Chemical company; first paper submitted to Solid State Commun.: July 1976 [published: L. Takács, SSC **21**(6), 611-613 (February 1977)].

Around 1976, it was planned to construct a so-called quarto milling device for melt quenching (four rotating cylinders) too complicated – never completed

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First paper on melt spinning

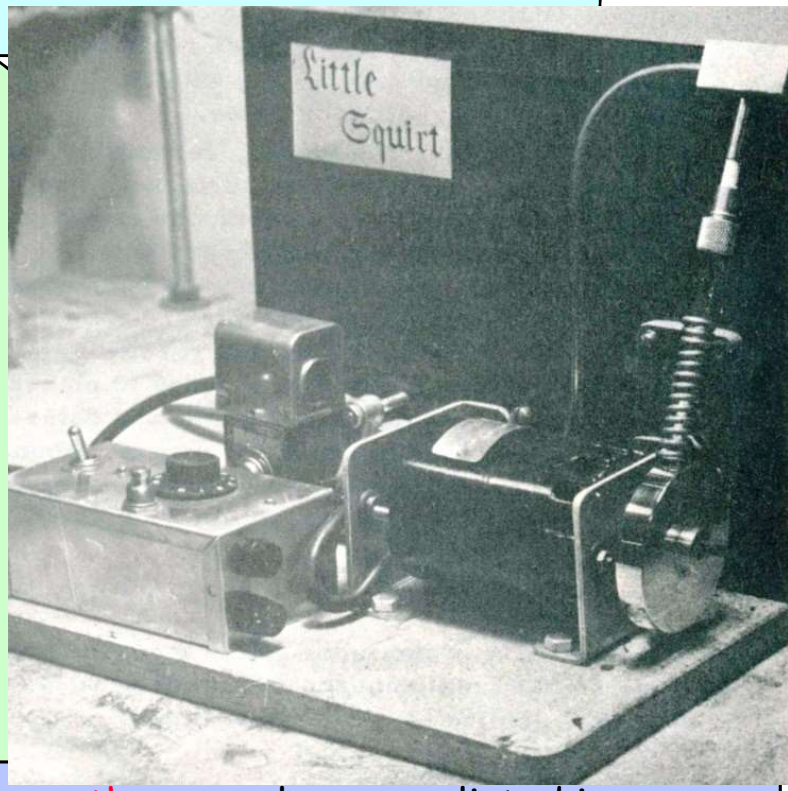
H. Liebermann and C.D. Graham, Jr. (Univ. Pennsylvania, Philadelphia): Production of amorphous alloy ribbons and effects of apparatus parameters on ribbon dimensions. IEEE Transactions on Magnetics, vol. 12, no. 6, pp. 921-923, November 1976, doi: 10.1109/TMAG.1976.1059201.
(In: Proceedings of the first joint MMM-INTERMAG conference, Pittsburgh, PA, June-15-18, 1976) paper cited by 336 in GS

Breakthrough in Budapest: Summer 1976, Howard Liebermann sent me his seminal paper with a photo of LITTLE SQUIRT the first well-elaborated melt-spinning device

September 1976: a copy was constructed in Budapest and metallic glass preparation (mainly Fe-B alloys) started in large quantities by A. Lovas for the whole Hungarian scientific community and also for colleagues in Kosice (Slovakia)

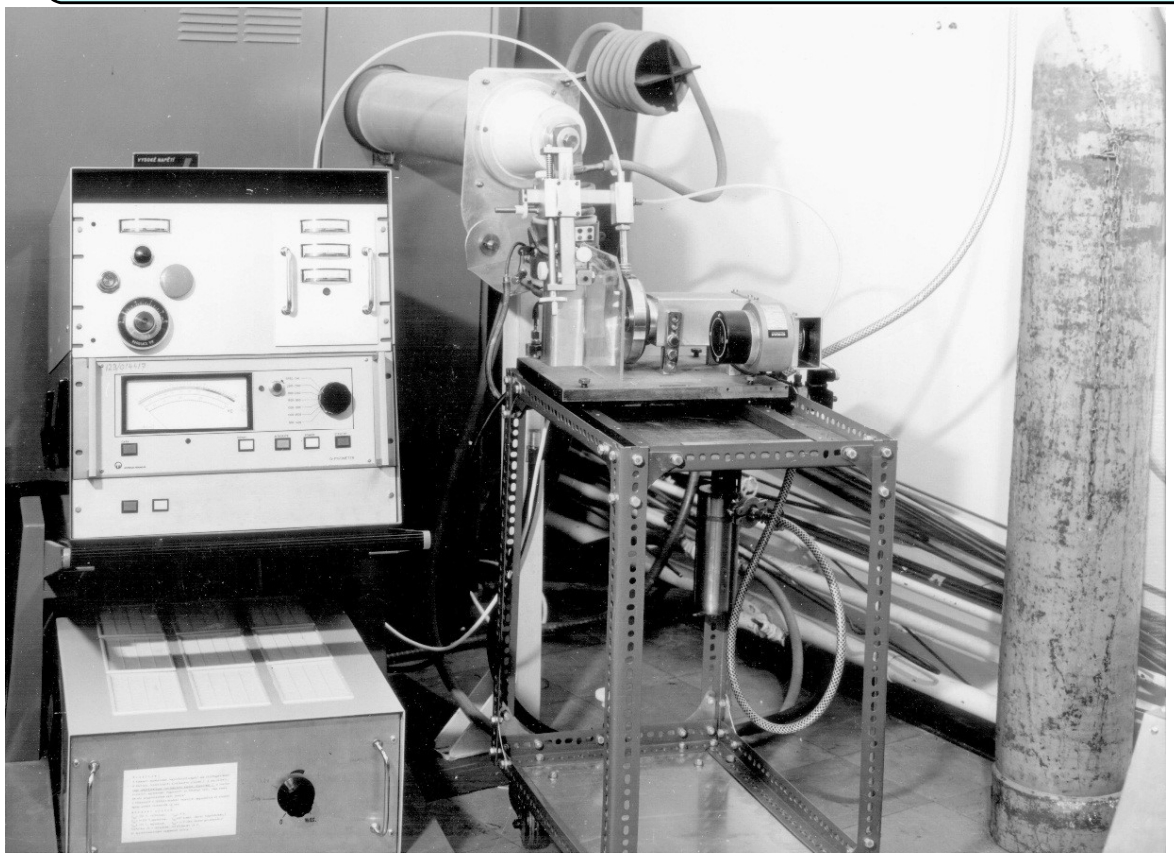
due to lack of access to XRD, our quick tests for amorphousness:
pyrophoricity (self-sustaining burning) and
180-degree bending test

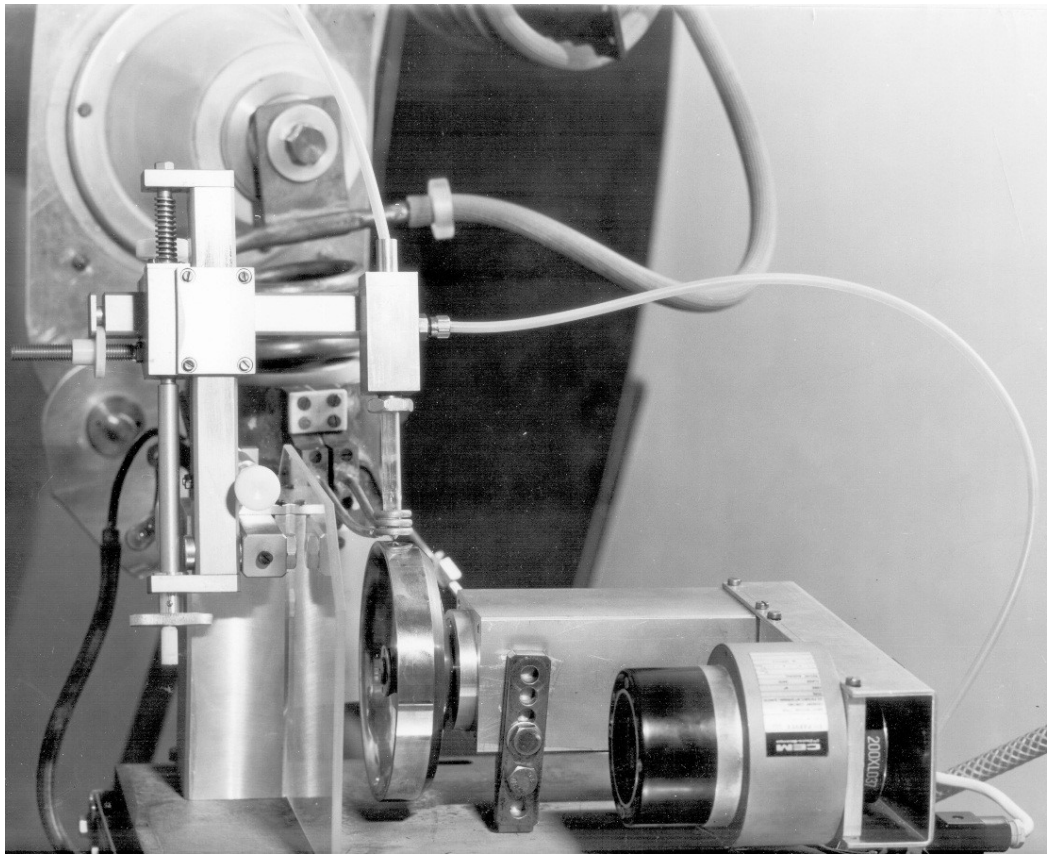
other colleagues were joking on us: our Fe-B ribbons are only good for Christmas tree decoration!



Until now, over 1000 published papers on amorphous alloys with Hungarian co-authors; early papers listed in:
I. Bakonyi: Amorphous alloys bibliography 1976-1981: Papers from the Central Research Institute for Physics (Budapest) and cooperating institutions ; available at http://real-eod.mtak.hu/7429/1/KFKIreports_82-028.pdf

Melt-spinning facility built in Budapest in the autumn of 1976
by cloning the Little Squirt apparatus of Howard Liebermann (Univ. Pennsylvania)





1977-1979: Spring schools on metallic glasses jointly with research staff of Csepel Metal Works and colleagues from Hungarian universities

Pol Duwez also attended once this school and I had the honor of translating him all the talks simultaneously about which he made notices

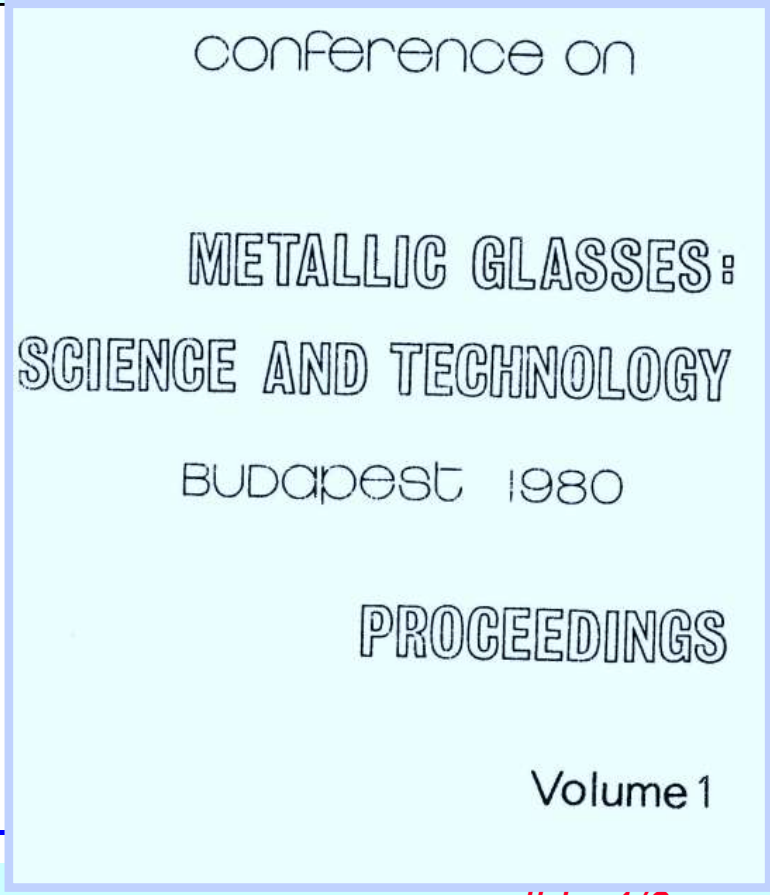
Since 1978, regular participation of Hungarian scientists at RQ/LAM meetings

Important event:

Conference on Metallic Glasses: Science and Technology (Budapest, 1980) (Proc. editors: C. Hargitai, I. Bakonyi and T. Kemény)

Among the participants, leading scientists of the field from all over the world:

R. Hasegawa, J. Durand, L.A. Davis, F.E. Luborsky, H.A. Davies, P. Duhaj, H. Matyja, J.L. Finney, U. Köster, H.R. Hilzinger, H.U. Künzi, T. Masumoto, S.R. Nagel, Y. Waseda



Members of the Metals Resarch Department at a birthday celebration gathering (2005); labeled those involved in metallic glass activity

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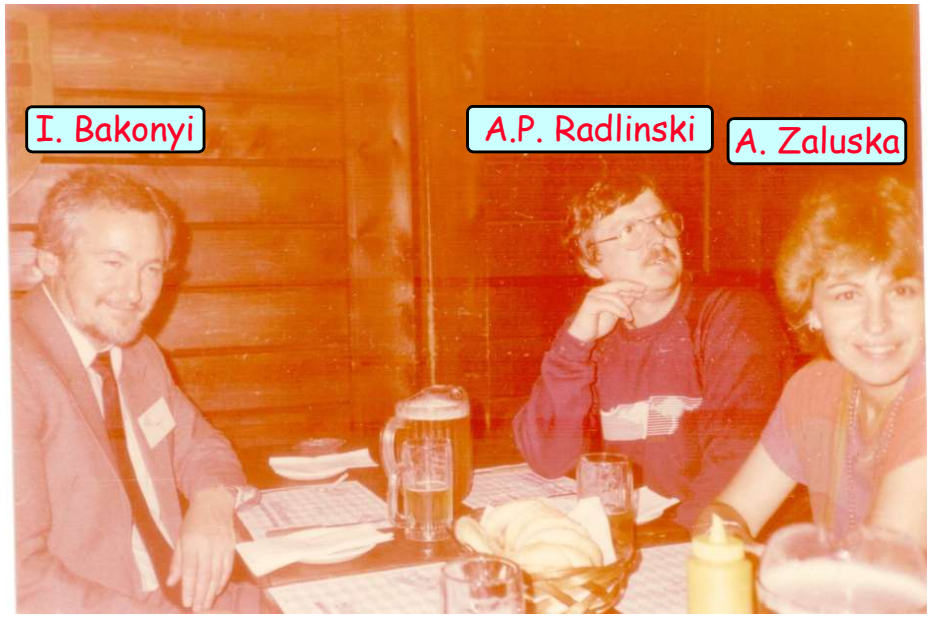
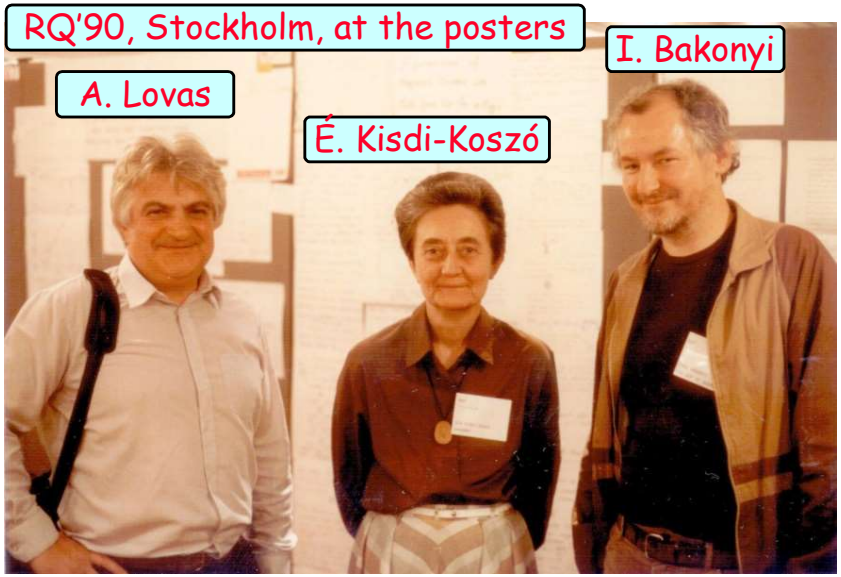
RQ'87, Montreal



RQ'87, Montreal, conference dinner

RQ'90, Stockholm, at the posters



RQ'96, Bratislava, boat trip

picture taken at a NATO nano meeting (Corfu, 1993)