

CNRS, would be incorporated. Final approval on the Dutch side for a HFL 4 million first phase (1992-6) and options on two more four-year phases were obtained in October 1992. Vietnam's Ministry of Education and Training then decided to found the International Training Institutes for Materials Science (ITIMS), with a US\$ 700 000 grant for four years. The ITIMS International Advisory Board met for the first time in January 1993 and the Institute received its first group of (20) MSc students in September; a second group (of 27) entered in 1994 and a third group (of 29)

in 1995. Some 10 ITIMS staff members visited Amsterdam and Twente during this period to prepare the MSc programme in close cooperation with Dutch colleagues. Two research sections were foreseen from the start, and in the winter of 1994, four PhD students began thesis research according to a "sandwich" arrangement. Other PhD students started parallel work on related topics as soon as equipment arrived in Vietnam. Of the 14 ITIMS networks, two on solar and wind-energy renewable electricity sources will hopefully develop into links with industry.

Postdoc's educated in the "old" projects have worked, or are still working, in Birmingham, Grenoble, Linköping, and Vienna. Once back in Hanoi they will supervise ITIMS students. Meanwhile, a second *International Workshop on Materials Science* took place in Hanoi in October 1995 to celebrate the 20 years of very successful scientific cooperation between The Netherlands and Vietnam. It was clear that the ITIMS, with help from Europe, is well on the road to playing a vital role as a regional centre for education and training in science.

## A Mixed Profile

**E.W.A. Lingeman summarizes recent surveys of the employment of physicists covering much of Europe.**

**France:** employment of PhD physicists & chemists classified under the heading *Direction scientifique 2: Science de la Matière* (approximately 10% are chemists) [1]. \*postdoc + still studying.

Year	Degrees awarded number PhDs	Employed temporary*	permanent	Unemployed	Unknown
1990	1331	101	1057	24	149
1991	1382	214	988	51	129
1992	1605	329	901	187	188
1993	1818	403	1109	254	52

**Germany:** physics degrees awarded & employment of 1st degree & PhD physicists [2-4]. Average course length - 1st degree: 6 years; PhD: 4 years. \* positions available for physicists according to the government employment agency.

Year	No. entering univ. physics <sup>2</sup>	Degrees awarded <sup>2</sup> number 1st deg	number PhD	Looking for position <sup>3</sup> 1st deg + PhD	Unemployed <sup>3</sup> 1st deg + PhD	PhD	Positions <sup>3</sup> available 1st deg + PhD
1985	6136	1500	550	1054	741	93	255
1986	5930	1600	600	1005	618	102	252
1987	6334	1890	670	1193	815	113	190
1988	7198	2118	795	1482	1027	108	109
1989	7521	2375	780	1542	1146	91	91
1990	7954	2887	880	1924	1340	49	49
1991	9806	3340	1074	2211	1563	42	42
1992	8278	3364	1121	2979	2005	30	30
1993	7295	3461	1249	4350	3035	32	32

**Italy:** physics PhDs awarded & employment of PhD physicists [5]. Average course length - PhD: 7.2 years. \* includes post-graduates

Year	Degrees awarded number PhDs	Employed temporary*	permanent	Unemployed	Unknown
'88-'92	4603	1103	1117	197	2159

**The Netherlands:** physics degrees awarded & employment of 1st degree & PhD physicists [6-8]. Average course length - 1st degree: 5.7 years (since 1982 starting year); PhD: 4 years. \* further study + postdocs + military service.

Year	No. starting <sup>6</sup> univ. physics	Degrees awarded <sup>6</sup> 1st deg	PhD	Unemployed <sup>6</sup> PhD
1985	702	429	82	3
1986	768	434	105	3
1987	857	489	102	4
1988	863	670	94	3
1989	865	451	110	4
1990	839	367	105	6
1991	826	415	88	6
1992	694	426	95	7
1993	733	387	145	13
1994	639	338	101	8
1995	570	302	106	4

Starting year	No. surveyed 1st deg + PhD	No. of respondents	In further study*	Looking for position	Employed
'79-'84 <sup>7</sup>	1757	1054		42	
'79-'86 <sup>8</sup>	1528	1018	430	130	435

**United Kingdom:** employment in 1995 of 1st degree physicists who graduated in 1994 [9]. \*postgraduate physics (788) + further training in law, teacher training, etc.

Year	Degrees awarded number 1st deg	Further study*	Employed temporary	permanent	Unemployed
1994	2017	997	221	101	164

### PhD Unemployment

**France** - For physicists completing their PhDs in France between 1990 and 1993, unemployment increased from an estimated 1.8 to 14% and temporary employment from 7.6% to 22.2%.

**Italy** - For physicists who completed their PhDs in Italy in 1988-92, unemployment in mid-1994 is estimated as 8.1%, with an estimated 45.4% in temporary employment. So unemployment and temporary employment among PhD physicists in Italy are relatively high.

**The Netherlands** - For physicists who completed their PhDs in The Netherlands having started university studies in 1985-91, unemployment in early 1995 was estimated to be 6.5%. So PhD physicists experience relatively low unemployment in The Netherlands. However, of the first degree and PhD physicists who started studying in 1979-86, some 12.8% were seeking a position in mid-1994 as compared with 4% of the 1979-1984 starters in 1990. So the overall employment situation for young physicists had deteriorated. It has improved recently since unemployment today among first degree and PhDs who started studying in 1979-86 is about 6%.

### Future Prospects

**Germany** - It takes on average about six years to be awarded a first degree (*Diplom*) in Germany and a further four years on average to be awarded a PhD. The data for Germany therefore indicate that of the 10 000 students who entered university-level physics courses in 1991, some 5000 will receive *Diplom* in 1997 of which some 2500 will receive PhDs in 2001. Extrapolations suggest that the number of first-degree and PhD physicists seeking positions in 2001 will exceed 7000 so there will be about 2.8 physicists seeking positions

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for every new PhD. Future employment prospects for PhD physicists in Germany therefore look rather gloomy. Moreover, government agencies report a decreasing number of positions for physicists.

**The Netherlands** – Extrapolations of the data given in the table indicate that of the 826 students who entered university-level physics courses in 1991, some 280 will receive first degrees (*Doctoraal*) in 1996 and some 70 will receive PhDs in 2000. Based on the 1994 survey of employment of first degree and PhD physicists and recent data indicating a 6% unemployment rate at present, some 100 first degree and PhD physicists will be seeking positions in 2000, so there will be about 1.4 physicists seeking positions for every new PhD (roughly one-half the ratio for Germany). So employment prospects for physicists in Holland seem promising.

### Further Study

Considering the most recent data, in Germany roughly 1249 (40%) of the 2887 students who graduated with a first degree in 1990 continued their studies to receive a physics PhD in 1993. In The Netherlands, roughly 106 (26%) of the 415 students who graduated with a first degree in 1991 continued their studies to receive a physics PhD in 1995. In the UK, the data indicate that 788 (39%) of the 2017 students who graduated with a first degree in physics in 1995 entered postgraduate studies in physics. So an important percentage of physics graduates are now continuing into postgraduate study.

### References

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young scientists via Internet.

- [2] Survey of physics degrees carried out in mid-1994 by P. Reineke; reported in [4].  
 [3] Survey of employment data by W. Henniger, Zentralstelle für Arbeitsvermittlung, Frankfurt-am-Main; reported in [4].  
 [4] H. Sixl, *Physikalische Blätter* 51 (1995) 850.  
 [5] M. Basile, *Indagine nazionale sui laureati in Fisica nel quinquennio 1987/88 - 1991/92* (Italian Physical Society, 1995). Survey in mid-1994. *Nuovo Saggiatore* (to be published).  
 [6] Data from the Netherlands' Physical Society database.  
 [7] G.K. Maurice, *Arbeidsmarkt voor Jonge Fysici* (The Netherlands' Physical Society) Utrecht, 1991. Survey in mid-1990.  
 [8] M. van Asten, *Arbeidsmarkt voor Jonge Fysici - 2* (The Netherlands' Physical Society) Amsterdam, 1994. English version: E.W.A. Lingeman, *Labour Market for Young Physicists - 2* (The Netherlands' Physical Society) Amsterdam. Survey in mid-1994.  
 [9] P. Diamond, The Institute of Physics, London. Source: *Universities Statistical Record*.

## DEPARTMENT HEAD, ALSO TO BE APPOINTED AS PROFESSOR OF NEUTRON PHYSICS <sup>M/F</sup>

■ The Interfacultair Reactor Instituut (IRI), affiliated with the Delft University of Technology, is the Dutch university center for research, education and training in areas where its nuclear reactor, radio-nuclides, ionizing radiation and related expertise play a central role. The four research departments are Radio-chemistry, Radiation Chemistry, Reactor Physics and Radiation Physics. The institute has a staff of about 200.

■ At our Radiation Physics department there is a vacancy for a scientist (m/f) as the Department Head, also to be appointed at the Faculty of Applied Physics as full-time Professor of Neutron Physics.

■ Within this department condensed matter research is carried out with thermal neutron beams and Mössbauer spectrometry. The major neutron research areas are dynamics and structure of liquids and alloys, static and dynamic properties of mesoscopic magnetic systems (polarized neutrons), and surface and interfacial studies (reflectometry). The department also supports other Dutch groups in their neutron research projects. At our reactor five neutron instruments are available, an extension is planned, and we make use of international facilities (ISIS, ILL, HMI, Riso, Saclay). The department now has 9 scientists, including one professor of Radiation Physics, 15 technical staff, 14 PhD- and 10 MSc students.

■ Scientists with experience in the development of neutron scattering techniques are invited to apply. The candidates should have a relevant established research and teaching record. He/she should be capable of leading an interdisciplinary department in a cooperative style. Appropriate communication and teaching skills are demanded, as well as readiness to learn Dutch.

■ For more information, please contact professor dr.ir. L.A. de Graaf (tel. +31 15 2785545) or professor dr.ir. H. van Dam (tel. +31 15 2783608). Information is also available on Internet at <http://www.iri.tudelft.nl/> and in Neutron News, 5(2) 1994, p. 12. Applications including a curriculum vitae, list of publications and a short summary on scientific and teaching activities should be sent by May 15, 1996 to Mrs. drs. C. Muis, Interfacultair Reactor Instituut, Mekelweg 15, 2629 JB Delft, the Netherlands, mentioning code R9602/2493 in the upper left corner of the letter.



**TU Delft**

DELFT UNIVERSITY OF TECHNOLOGY

Delft University of Technology (TU Delft) is both the oldest and largest institute of its kind in the Netherlands, with about 14000 students, 2000 scientists, 2400 technical and support staff and an annual budget of about 500 million guilders, 20% of which is earned by contract research. TU Delft is also one of the largest European universities of technology. In 1990, an international review rated TU Delft among the top three institutes in Europe within a group of more than 20 peers.