

Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
World																
Total articles	42,889	46,426	49,533	50,524	56,314	54,999	60,869	59,484	70,041	71,362	71,353	78,189	83,561	78,749	86,256	92,459
with multiple institutions	18,273	20,316	22,397	23,300	27,724	27,345	30,676	30,634	36,475	38,326	39,702	43,763	48,413	46,326	51,894	56,135
with domestic institutions only	37,239	40,072	42,142	42,841	46,822	45,651	50,403	49,123	58,106	58,593	57,907	63,485	67,181	62,752	68,265	72,353
with international institutions	5,650	6,354	7,391	7,683	9,492	9,348	10,466	10,361	11,935	12,769	13,446	14,704	16,380	15,997	17,991	20,106
Canada																
Total articles	1,984	2,011	2,150	2,093	2,077	2,180	2,475	2,449	3,022	3,223	3,249	3,601	3,852	3,628	3,758	4,048
with multiple institutions	1,016	1,051	1,143	1,137	1,167	1,234	1,423	1,412	1,658	1,852	1,938	2,097	2,373	2,232	2,408	2,570
with domestic institutions only	1,443	1,471	1,468	1,445	1,360	1,418	1,575	1,558	1,999	2,035	2,029	2,290	2,359	2,196	2,199	2,363
with international institutions	541	540	682	648	717	762	900	891	1,023	1,188	1,220	1,311	1,493	1,432	1,559	1,685
Mexico																
Total articles	174	215	273	285	372	410	421	482	445	534	541	530	654	610	632	636
with multiple institutions	111	134	187	200	268	304	289	348	329	371	385	400	498	491	497	494
with domestic institutions only	106	142	167	169	193	248	246	299	274	344	348	304	418	353	381	382
with international institutions	68	73	106	116	179	162	175	183	171	190	193	226	236	257	251	254
United States																
Total articles	12,892	13,103	13,728	13,138	14,369	14,248	15,540	14,625	16,707	16,701	16,508	17,838	18,286	16,668	18,131	18,573
with multiple institutions	6,321	6,642	7,095	7,140	8,106	8,211	8,957	8,540	9,887	10,254	10,577	11,495	12,087	11,133	12,274	12,771
with domestic institutions only	10,643	10,591	10,963	10,205	10,874	10,819	11,548	10,869	12,383	12,193	11,784	12,644	12,610	11,216	12,034	11,903
with international institutions	2,249	2,512	2,765	2,933	3,495	3,429	3,992	3,756	4,324	4,508	4,724	5,194	5,676	5,452	6,097	6,670
Argentina																
Total articles	156	154	181	224	238	240	238	250	295	284	282	332	322	401	331	372
with multiple institutions	88	95	118	136	158	164	158	179	222	201	200	234	248	302	249	277
with domestic institutions only	110	107	125	158	159	154	147	142	180	171	177	196	176	266	196	222
with international institutions	46	47	56	66	79	86	91	108	115	113	105	136	146	135	135	150
Brazil																
Total articles	343	460	655	717	784	825	980	922	1,017	1,205	1,017	1,180	1,251	1,208	1,324	1,351
with multiple institutions	208	298	421	456	502	565	634	616	685	777	691	843	923	910	1,006	1,023
with domestic institutions only	227	308	456	486	548	551	698	634	715	898	736	822	862	826	878	859
with international institutions	116	152	199	231	236	274	282	288	302	307	281	358	389	382	446	492
Chile																
Total articles	34	56	75	85	90	83	149	118	167	149	162	181	225	210	186	224
with multiple institutions	23	39	45	53	58	61	101	78	120	108	109	137	180	165	140	189
with domestic institutions only	18	24	39	49	51	37	86	55	84	70	74	82	89	96	71	75
with international institutions	16	32	36	36	39	46	63	63	83	79	88	99	136	114	115	149
Austria																
Total articles	309	280	305	334	416	433	420	434	451	524	538	625	594	605	624	722
with multiple institutions	195	171	204	227	294	310	292	313	320	395	411	479	474	483	485	575
with domestic institutions only	157	148	157	156	180	187	196	199	212	222	225	252	265	245	260	303
with international institutions	152	132	148	178	236	246	224	235	239	302	313	373	329	360	364	419

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S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Belgium																
Total articles	388	467	462	520	600	622	638	625	791	750	854	907	903	893	958	1,052
with multiple institutions	197	265	275	305	363	391	427	396	553	532	652	658	684	677	757	830
with domestic institutions only	240	280	267	309	344	324	325	338	387	344	401	435	411	403	410	430
with international institutions	148	187	195	211	256	298	313	287	404	406	453	472	492	490	548	622
Czech Republic																
Total articles	231	212	241	230	307	293	347	350	431	369	382	437	504	413	483	493
with multiple institutions	141	159	168	166	223	216	253	223	289	270	282	326	374	306	339	392
with domestic institutions only	129	87	107	102	137	122	156	168	210	162	173	206	253	199	259	223
with international institutions	102	125	134	128	170	171	191	182	221	207	209	231	251	214	224	270
Denmark																
Total articles	252	275	319	267	376	324	328	349	416	433	393	485	470	447	582	577
with multiple institutions	136	149	184	165	230	213	216	210	245	277	281	327	336	322	419	428
with domestic institutions only	149	164	187	140	194	155	163	188	235	223	184	237	213	219	259	262
with international institutions	103	111	132	127	182	169	165	161	181	210	209	248	257	228	323	315
Finland																
Total articles	284	352	395	379	476	471	524	472	540	580	525	558	584	563	601	697
with multiple institutions	157	188	244	203	300	291	328	278	322	354	331	380	406	401	418	508
with domestic institutions only	201	244	258	268	308	310	324	305	349	364	305	338	332	282	326	330
with international institutions	83	108	137	111	168	161	200	167	191	216	220	220	252	281	275	367
France																
Total articles	2,361	2,686	2,786	2,663	3,429	3,229	3,316	3,184	3,603	3,843	3,763	4,355	4,621	3,901	4,446	4,691
with multiple institutions	1,385	1,664	1,764	1,726	2,269	2,143	2,284	2,197	2,529	2,775	2,814	3,293	3,565	3,086	3,561	3,826
with domestic institutions only	1,618	1,753	1,779	1,643	2,067	1,946	1,932	1,837	2,095	2,153	2,041	2,386	2,415	2,074	2,246	2,292
with international institutions	743	933	1,007	1,020	1,362	1,283	1,384	1,347	1,508	1,690	1,722	1,969	2,206	1,827	2,200	2,399
Germany																
Total articles	3,408	3,606	3,774	3,839	4,694	4,072	4,293	4,037	4,278	4,569	4,436	4,449	4,799	4,327	4,896	5,258
with multiple institutions	1,652	1,813	2,096	2,074	2,721	2,431	2,525	2,464	2,678	2,816	2,974	2,888	3,381	3,120	3,509	3,784
with domestic institutions only	2,399	2,515	2,470	2,525	2,890	2,446	2,532	2,348	2,469	2,651	2,315	2,498	2,426	2,256	2,593	2,671
with international institutions	1,009	1,091	1,304	1,314	1,804	1,626	1,761	1,689	1,809	1,918	2,121	1,951	2,373	2,071	2,303	2,587
Greece																
Total articles	287	384	418	404	448	476	513	558	575	631	771	860	808	718	781	786
with multiple institutions	134	192	229	212	251	250	252	290	306	370	421	497	485	426	460	481
with domestic institutions only	201	266	256	261	276	326	350	394	384	423	523	542	564	481	501	487
with international institutions	86	118	162	143	172	150	163	164	191	208	248	318	244	237	280	299
Hungary																
Total articles	139	144	163	173	219	175	223	218	309	227	210	199	243	190	211	231
with multiple institutions	93	113	100	118	153	124	144	161	214	166	166	161	180	132	157	178
with domestic institutions only	61	55	86	80	103	79	130	91	163	111	87	79	105	90	86	98
with international institutions	78	89	77	93	116	96	93	127	146	116	123	120	138	100	125	133

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S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ireland																
Total articles	73	146	138	142	166	143	193	212	286	264	330	331	348	343	377	388
with multiple institutions	43	72	81	74	112	86	128	144	187	172	218	234	244	263	271	291
with domestic institutions only	39	85	74	87	84	86	99	107	152	146	172	150	179	161	171	172
with international institutions	34	61	64	55	82	57	94	105	134	118	158	181	169	182	206	216
Italy																
Total articles	1,399	1,651	1,762	1,901	2,265	2,153	2,366	2,331	2,586	2,730	2,819	2,988	3,270	2,835	3,233	3,521
with multiple institutions	813	999	1,124	1,178	1,463	1,393	1,537	1,483	1,693	1,831	1,839	1,948	2,148	1,866	2,209	2,399
with domestic institutions only	1,007	1,140	1,185	1,332	1,476	1,418	1,570	1,571	1,702	1,747	1,786	1,881	2,032	1,729	1,907	2,060
with international institutions	392	511	577	569	789	735	796	760	884	983	1,033	1,107	1,238	1,106	1,326	1,461
Netherlands																
Total articles	798	857	874	978	1,051	1,017	1,031	1,000	1,175	1,201	1,208	1,302	1,342	1,366	1,331	1,604
with multiple institutions	434	465	496	597	654	647	665	703	776	854	868	954	1,000	995	1,013	1,213
with domestic institutions only	497	571	526	600	628	595	570	526	649	609	618	623	653	664	596	699
with international institutions	301	286	348	378	423	422	461	474	526	592	590	679	689	702	735	905
Poland																
Total articles	440	526	522	620	828	792	754	901	844	912	841	991	962	820	939	950
with multiple institutions	240	274	306	344	502	461	415	544	527	507	506	607	549	461	539	527
with domestic institutions only	257	317	298	360	451	463	452	515	464	548	500	559	600	511	585	626
with international institutions	183	209	224	260	377	329	302	386	380	364	341	432	362	309	354	324
Portugal																
Total articles	203	262	309	354	394	399	538	697	615	928	592	672	754	740	790	894
with multiple institutions	108	150	176	222	253	272	367	490	436	686	434	507	578	575	622	696
with domestic institutions only	131	173	188	224	232	232	327	426	358	554	328	368	389	393	432	465
with international institutions	72	89	121	130	162	167	211	271	257	374	264	304	365	347	358	429
Spain																
Total articles	864	1,046	1,110	1,123	1,504	1,538	1,523	1,596	1,952	2,184	2,297	2,700	2,780	2,653	3,024	3,240
with multiple institutions	456	550	596	636	875	879	910	982	1,164	1,307	1,460	1,717	1,855	1,772	2,081	2,273
with domestic institutions only	610	739	730	721	948	1,006	977	1,013	1,249	1,374	1,398	1,667	1,623	1,559	1,761	1,802
with international institutions	254	307	380	402	556	532	546	583	703	810	899	1,033	1,157	1,094	1,263	1,438
Sweden																
Total articles	678	703	891	827	1,090	953	959	936	1,112	1,127	1,058	1,122	1,125	1,100	1,193	1,358
with multiple institutions	351	380	502	458	695	550	587	563	692	719	715	755	802	812	863	1,002
with domestic institutions only	463	458	566	550	661	598	579	570	673	682	577	639	584	547	577	644
with international institutions	215	245	325	277	429	355	380	366	439	445	481	483	541	553	616	714
United Kingdom																
Total articles	3,168	3,797	4,061	4,158	4,310	3,725	4,190	3,882	4,468	4,444	4,266	4,487	4,704	4,189	4,527	4,873
with multiple institutions	1,465	1,706	1,946	2,033	2,307	2,013	2,328	2,207	2,580	2,604	2,672	2,816	3,128	2,820	3,137	3,451
with domestic institutions only	2,349	2,796	2,873	2,951	2,913	2,444	2,701	2,436	2,746	2,622	2,382	2,471	2,408	2,112	2,234	2,249
with international institutions	819	1,001	1,188	1,207	1,397	1,281	1,489	1,446	1,722	1,822	1,884	2,016	2,296	2,077	2,293	2,624

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S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Norway																
Total articles	170	198	188	243	246	269	247	240	293	343	346	408	496	445	510	551
with multiple institutions	107	120	120	148	169	172	172	164	195	241	248	299	385	308	376	396
with domestic institutions only	104	124	115	147	140	148	128	127	160	198	180	214	258	253	244	287
with international institutions	66	74	73	96	106	121	119	113	133	145	166	194	238	192	266	264
Russia																
Total articles	1,827	1,733	1,607	1,929	1,883	1,834	1,726	1,521	1,525	1,216	1,443	1,208	1,339	1,118	1,270	1,488
with multiple institutions	692	701	687	824	1,038	953	934	824	850	734	855	665	764	627	719	821
with domestic institutions only	1,375	1,272	1,098	1,377	1,100	1,159	1,048	910	924	621	857	713	811	715	825	973
with international institutions	452	461	509	552	783	675	678	611	601	595	586	495	528	403	445	515
Switzerland																
Total articles	508	608	636	653	727	705	778	819	879	997	1,064	1,112	1,180	1,055	1,151	1,242
with multiple institutions	305	342	406	414	442	447	513	533	616	687	776	814	874	763	826	923
with domestic institutions only	265	341	304	325	382	343	365	402	393	457	434	468	463	427	502	506
with international institutions	243	267	332	328	345	362	413	417	486	540	630	644	717	628	649	736
Iran																
Total articles	54	71	95	121	169	173	283	322	439	574	739	1,029	1,573	1,881	2,235	2,610
with multiple institutions	34	38	68	77	111	102	154	174	255	307	391	553	829	978	1,191	1,509
with domestic institutions only	25	40	47	67	97	111	182	212	287	412	544	792	1,247	1,485	1,768	2,016
with international institutions	29	31	48	54	72	62	101	110	152	162	195	237	326	396	467	594
Israel																
Total articles	431	463	483	484	554	498	513	475	516	583	584	582	573	481	506	528
with multiple institutions	213	234	238	260	292	273	276	254	285	336	341	342	347	295	327	329
with domestic institutions only	300	308	332	308	361	314	343	313	328	374	368	373	347	294	280	323
with international institutions	131	155	151	176	193	184	170	162	188	209	216	209	226	187	226	205
Saudi Arabia																
Total articles	127	142	143	132	115	117	114	119	137	143	137	157	206	282	473	690
with multiple institutions	50	40	47	42	46	53	34	46	52	62	59	81	132	207	360	552
with domestic institutions only	85	115	108	101	78	76	86	89	96	95	92	91	92	95	145	177
with international institutions	42	27	35	31	37	41	28	30	41	48	45	66	114	187	328	513
Turkey																
Total articles	312	360	414	478	573	665	858	1,156	1,015	1,076	1,035	1,447	1,401	1,376	1,470	1,498
with multiple institutions	153	161	196	235	284	349	439	587	516	559	561	787	769	773	890	908
with domestic institutions only	235	276	313	350	428	493	634	959	793	860	790	1,140	1,078	1,080	1,108	1,072
with international institutions	77	84	101	128	145	172	224	197	222	216	245	307	323	296	362	426
Egypt																
Total articles	206	203	207	240	271	296	318	291	344	318	363	387	493	508	532	550
with multiple institutions	91	95	103	103	142	150	159	142	180	163	194	204	300	312	362	377
with domestic institutions only	152	144	150	181	196	207	237	210	249	221	256	262	312	306	302	286
with international institutions	54	59	57	59	75	89	81	81	95	97	107	125	181	202	230	264

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S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South Africa																
Total articles	122	132	143	182	201	164	217	175	235	249	288	288	289	343	400	387
with multiple institutions	57	56	75	84	95	89	116	103	126	124	167	168	186	227	266	273
with domestic institutions only	81	99	99	127	135	108	149	98	148	164	180	189	164	181	204	213
with international institutions	41	33	44	55	66	56	68	77	87	85	108	99	125	162	196	174
China																
Total articles	2,034	2,173	2,827	3,443	3,770	4,445	5,440	5,696	8,853	8,973	10,122	12,112	14,384	14,979	16,861	20,452
with multiple institutions	1,022	1,091	1,364	1,718	1,976	2,291	2,894	3,054	4,745	5,076	5,687	7,011	8,561	9,232	10,741	13,086
with domestic institutions only	1,508	1,617	2,122	2,654	2,821	3,320	4,131	4,362	7,001	6,934	7,990	9,463	11,187	11,312	12,639	15,479
with international institutions	526	556	705	789	949	1,125	1,309	1,334	1,852	2,039	2,132	2,649	3,197	3,667	4,222	4,973
India																
Total articles	1,191	1,306	1,511	1,458	1,655	1,716	1,808	1,965	2,253	2,684	3,171	3,571	3,787	3,829	4,145	4,408
with multiple institutions	423	511	590	621	721	835	876	1,002	1,073	1,366	1,639	1,851	2,131	2,217	2,320	2,582
with domestic institutions only	1,038	1,121	1,291	1,209	1,367	1,380	1,449	1,571	1,831	2,168	2,585	2,941	3,010	2,971	3,254	3,398
with international institutions	153	185	220	249	288	336	359	394	422	516	586	630	777	858	891	1,010
Japan																
Total articles	5,718	6,346	6,687	6,356	7,500	7,103	8,190	7,126	8,040	7,733	7,054	6,240	6,791	5,530	5,854	5,739
with multiple institutions	2,874	3,276	3,604	3,489	4,357	4,084	4,781	4,342	4,892	4,901	4,599	4,039	4,464	3,747	4,032	3,993
with domestic institutions only	4,948	5,487	5,656	5,300	6,200	5,810	6,700	5,701	6,425	6,046	5,522	4,774	5,142	4,058	4,233	4,025
with international institutions	770	859	1,031	1,056	1,300	1,293	1,490	1,425	1,615	1,687	1,532	1,466	1,649	1,472	1,621	1,714
Singapore																
Total articles	362	470	549	747	811	849	1,000	952	1,210	1,194	1,155	1,316	1,218	1,263	1,332	1,382
with multiple institutions	147	188	227	306	361	417	501	501	661	712	746	884	825	883	928	1,012
with domestic institutions only	261	361	405	565	587	571	677	642	815	760	698	757	672	654	685	635
with international institutions	101	109	144	182	224	278	323	310	395	434	457	559	546	609	647	747
South Korea																
Total articles	1,192	1,520	1,863	2,208	2,564	2,706	3,300	3,633	4,753	4,431	4,244	5,072	5,720	5,453	6,202	6,680
with multiple institutions	752	895	1,066	1,250	1,556	1,698	2,169	2,379	3,094	2,898	2,841	3,385	3,858	3,691	4,420	4,708
with domestic institutions only	894	1,212	1,485	1,807	2,031	2,100	2,560	2,785	3,753	3,426	3,147	3,813	4,326	4,081	4,627	4,912
with international institutions	298	308	378	401	533	606	740	848	1,000	1,005	1,097	1,259	1,394	1,372	1,575	1,768
Taiwan																
Total articles	1,206	1,365	1,361	1,530	1,731	1,642	2,028	2,013	2,439	2,842	2,783	3,247	3,299	3,167	3,304	3,206
with multiple institutions	455	501	540	618	823	725	970	1,012	1,309	1,603	1,646	1,952	2,032	2,017	2,181	2,078
with domestic institutions only	1,053	1,219	1,223	1,360	1,540	1,462	1,779	1,787	2,161	2,494	2,388	2,810	2,857	2,697	2,788	2,635
with international institutions	153	146	138	170	191	180	249	226	278	348	395	437	442	470	516	571
Australia																
Total articles	875	958	1,080	1,105	1,168	1,151	1,281	1,212	1,493	1,540	1,629	1,801	1,970	2,053	2,295	2,588
with multiple institutions	420	489	563	594	684	652	755	736	884	940	1,017	1,204	1,379	1,429	1,660	1,880
with domestic institutions only	625	670	733	737	730	683	767	696	894	903	902	950	987	1,011	1,122	1,196
with international institutions	250	288	347	368	438	468	514	516	599	637	727	851	983	1,042	1,173	1,392

Appendix table 5-42

S&E articles in engineering, by coauthorship attribute and selected country/economy: 1997–2012

Country/economy and coauthorship attribute	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
New Zealand																
Total articles	135	169	170	140	191	167	204	189	207	239	235	265	249	259	262	313
with multiple institutions	46	88	86	80	105	101	115	113	137	168	166	169	165	185	194	224
with domestic institutions only	104	102	104	74	102	94	113	104	99	102	99	153	122	115	111	142
with international institutions	31	67	66	66	89	73	91	85	108	137	136	112	127	144	151	171

NOTES: Article counts are from the set of journals covered by the Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by the year they entered the database, rather than the year of publication, and are assigned to a country/economy on the basis of the institutional address(es) listed in the article. Articles are credited on a whole-count basis (i.e., each collaborating country/economy is credited with one count). Countries/economies with less than 1% of internationally coauthored articles in 2012 are omitted. Articles with multiple institutions are counts of articles with two or more institutional addresses. Articles with domestic institutions only are counts of articles with one or more institutional addresses all within the country/economy. Articles with international institutions are counts of articles with one or more institutional addresses outside the country/economy.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent Board™, special tabulations (2013) from Thomson Reuters, SCI and SSCI, http://thomsonreuters.com/products_services/science/.

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