

Spectral Measurement Data for Human Skin

1. Data file

\FACE folder is divided into six sub-directories; i.e. \SHISEIDO, \KAO, \OOKA, \KAWASAKI, \OULU and \SUN. Each sub-folder contains spectral reflectances of faces (and a small amount of arms and hands). File names have the form of *ttgcppss.org*, where

tt name of a data set which, in most cases, indicates place where the data were collected
g sex (f: female, m: male)
c skin condition (b: bare skin, f: Foundation-applied skin)
pp measured position (ch: cheek, fh: forehead, nk: neck, zy: zygomatic region, am:arm)
ss spectral measurement device used.

Under a keyword 'SAMPLE_LOC' in data headers, subject information is described; e.g. "TAIPEI:FORHEAD:28. This means that the data was collected at the forehead of a 28-year-old person in Taipei. In the following section, data files in each subdirectory are explained.

Table 1 Files stored in \SHISEIDO folder.

Subject set (Place, Nationality)	Skin condition	Position	File name	No. of colours
Bangkok	Foundation-applied skin	Cheek	baffchc1.org	62
	Bare skin	Forehead	bafbhc1.org	62
	Bare skin	Cheek	bafbchc1.org	62
	Bare skin	Neck	bafbnc1.org	62
Kualalumpur (Chinese family)	Foundation-applied skin	Cheek	kcffchc1.org	30
	Bare skin	Forehead	kcfbhc1.org	30
	Bare skin	Cheek	kcfbchc1.org	30
	Bare skin	Neck	kcfbnkc1.org	30
Kualalumpur (India family)	Foundation-applied skin	Cheek	kiffchc1.org	30
	Bare skin	Forehead	kifbhc1.org	30
	Bare skin	Cheek	kifbchc1.org	30
	Bare skin	Neck	kifbnkc1.org	30
Kualalumpur (Malay family)	Foundation-applied skin	Cheek	kmffchc1.org	30
	Bare skin	Forehead	kmfbhc1.org	30
	Bare skin	Cheek	kmfbchc1.org	30
	Bare skin	Neck	kmfbnkc1.org	30
Taipei	Foundation-applied skin	Cheek	taffchc1.org	60
	Bare skin	Forehead	tafbhc1.org	60
	Bare skin	Cheek	tafbchc1.org	60
	Bare skin	Neck	tafbnc1.org	60
Tokyo-1	Bare skin	Neck	t1fbnc1.org	976
	Bare skin	Cheek	t1fbchc1.org	976
	Bare skin	Zygomatic region	t1fbzyc1.org	976
Tokyo-2	Bare skin	Forehead	t2fbhc1.org	123
	Bare skin	Cheek	t2fbchc1.org	123
	Foundation-applied skin	Forehead	t2ffhc1.org	123
	Foundation-applied skin	Cheek	t2ffchc1.org	123

2. Measured objects and measurement methods

2.1 Data in \SHISEIDO

The data in \SHISEIDO were provided by Shiseido Co., Ltd. The subdirectory contains 27 files shown in table 1. All data were collected from females. The spectral measurement device used was '04' and the optical geometry condition was 0/d (specularity excluded).

2.2 Data in \KAO

The data in \KAO were provided by Kao corporation. The subdirectory contains the 8 files shown in table 2. All data were collected from females. The spectral measurement device used was '05' and the optical geometry condition was 0/d (specularity excluded).

Table 2 Files stored in \KAO folder.

Subject set (Place, Nationality)	Skin condition	Position	File name	No. of colours
Tokyo (Japanese)	Bare skin	Forehead	tofbfhc2.org	271
	Foundation-applied skin	Forehead	tofffhc2.org	266
	Bare skin	Zygomatic region	tofbzyc2.org	461
	Foundation-applied skin	Zygomatic region	toffzyc2.org	325
	Bare skin	Cheek	tofbchc2.org	460
	Foundation-applied skin	Cheek	toffchc2.org	325
	Bare skin	Arm	tofbamc2.org	37
	Bare skin	Neck	tofbnkc2.org	313

2.3 Data in \OOKA

The data in \OOKA were collected on 14 January 1998 on the Ookayama campus of Tokyo Institute of Technology. Spectral data at three positions (forehead, zygomatic region and cheek) of 63 subjects' faces are stored (table 3). Colours at the three positions for each subject were measured by the three remote-type spectral measurement devices '06', '08' and '09', respectively, and those at almost identical positions were measured by the two contact-type spectral measurement devices '04' and '05' (Table 4). Data are stored in corresponding order. For example, the i-th data in

Table 3 Composition of subjects by sex and nationality for \OOKA.

	Ookayama		Total
	Male	Female	
Japan	43	7	50
China	3	3	6
Korea	1	0	1
Singapore	1	0	1
Egypt	2	0	2
Bangladesh	1	0	1
Turkey	1	0	1
France	1	0	1
Total	53	10	63

'oombfhc1.org', 'oombzyc1.org' and 'oombchc1.org' are spectral reflectances measured with the same contact-type device at the forehead, zygomatic region and cheek, respectively, of one subject. In addition, the i-th data of 'oombfhr.org' etc. are spectral reflectance measured with a remote-type device at the forehead (at almost the identical position as that measured with the contact-type device) of the same subject. Though the optical geometry condition of the contact-type device is 0/d as described in 2.1 and 2.2, that of the remote-type device is 45/0. Tungsten lamps (including those with daylight filters) were used for illumination.

Table 4 Files stored in \OOKA folder.

Subject set (Sex / Skin condition)	Position	Type of measurement device	File name	No. of colours
Male / Bare skin	Forehead	Contact-1	oombfhc1.org	53
	Zygomatic region	Contact-1	oombzyc1.org	53
	Cheek	Contact-1	oombchc1.org	53
	Forehead	Contact-2	oombfhc2.org	53
	Zygomatic region	Contact-2	oombzyc2.org	53
	Cheek	Contact-2	oombchc2.org	53
	Forehead	Remote	oombfhr.org	53
	Zygomatic region	Remote	oombzyr.org	53
	Cheek	Remote	oombchr.org	53
Female / Bare skin	Forehead	Contact-1	oofbfhc1.org	5
	Zygomatic region	Contact-1	oofbzyc1.org	5
	Cheek	Contact-1	oofbhc1.org	5
	Forehead	Contact-2	oofbfhc2.org	5
	Zygomatic region	Contact-2	oofbzyc2.org	5
	Cheek	Contact-2	oofbhc2.org	5
	Forehead	Remote	oofbfhr.org	5
	Zygomatic region	Remote	oofbzyr.org	5
	Cheek	Remote	oofbchr.org	5
Female / Foundation-applied skin	Forehead	Contact-1	oofffhc1.org	5
	Zygomatic region	Contact-1	ooffzyc1.org	5
	Cheek	Contact-1	ooffchc1.org	5
	Forehead	Contact-2	oofffhc2.org	5
	Zygomatic region	Contact-2	ooffzyc2.org	5
	Cheek	Contact-2	ooffchc2.org	5
	Forehead	Remote	oofffhr.org	5
	Zygomatic region	Remote	ooffzyr.org	5
	Cheek	Remote	ooffchr.org	5

2.4 Data in \KAWASAKI

The data in \KAWASAKI were collected on 21 January 1998 at NEC Corporation, Kawasaki. Spectral data at three positions (forehead, zygomatic region and cheek) of 84 subjects' faces are stored (table 5). Colours at three positions for each subject were measured by the three remote-type spectral measurement devices '06', '07' and '09', respectively, and those at almost identical positions were measured

Table 5 Composition of subjects by sex and nationality for \KAWASAKI.

	Kawasaki		Total
	Male	Female	
Japan	66	14	80
China	1	0	1
Taiwan	1	0	1
Canada	1	0	1
Finland	1	0	1
Total	70	14	84

by the two contact-type spectral measurement devices '04' and '05' (table 6). Data are stored in corresponding order. For example, the *i*-th data in 'kambfhc1.org', 'kambzyc1.org' and 'kambchc1.org' are spectral reflectances measured with the same contact-type device at the forehead, zygomatic region and cheek, respectively, of one subject. In addition, the *i*-th data of 'kambfhr.org' etc. are spectral reflectances measured with a remote type device at the forehead (at almost the identical position as that measured with the contact-type device) of the same subject. The optical geometry condition and illumination are the same as those for data in \OOKA.