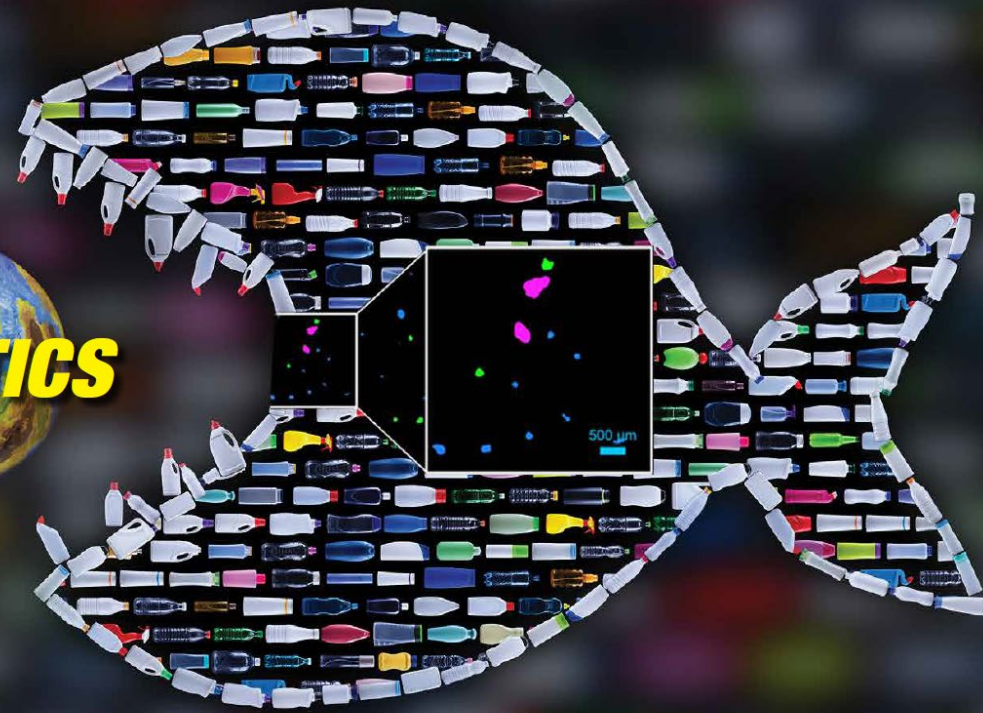




MICROPLASTICS



horiba.com/microplastics

HORIBA for Microplastics

Pham Ngoc Anh
HCM Business Manager, HORIBA Vietnam
(email: ngocanh.pham@horiba.com)

December 16th-17th, 2021

Corporate Outline

- **Head Office** Kyoto, Japan
- **Founded** October 17, 1945
- **Incorporated** January 26, 1953
- **Net Sales** 187 BJPY (FY2020)
- **Employees** 8,269 (FY2020)
- **Business** Manufacturing, sales, services of
analysis and measurement equipment



Chairman & Group CEO
Atsushi Horiba



Founder
Dr. Masao Horiba



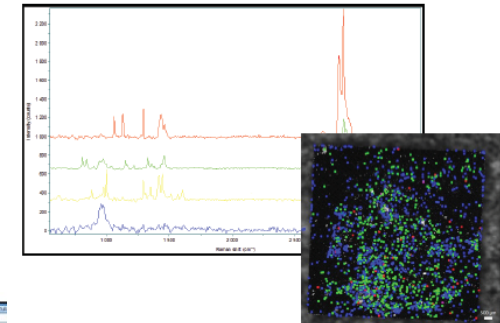
Motto “Joy and Fun”

Work that occupies most of the time in our lives should be more fulfilling to be able to enjoy our lives even more. Taking on new challenges and having pride in our work leads us to “Joy and Fun.”

Introduction to MPs and XploRA™ PLUS



- HORIBA Jobin Yvon (which made the world's first Raman (200th anniversary)) produces from the spectroscope
- **Accurately captures signals** from fine particles (can get accurate data because it has confocal performance)
- Includes “**LabSpec 6**”, a software specialized for particle analysis
- “**KnowItAll®**” is HORIBA’s own Raman spectral database for spectral searching, analysis and data mining
- Easy analysis of particles by using the “**ParticleFinder™**” software



Wavenumber (cm⁻¹)	Intensity	Wavenumber (cm⁻¹)	Intensity	Wavenumber (cm⁻¹)	Intensity
1600	0.00	1490	0.00	1470	0.00
1490	0.00	1450	0.00	1430	0.00
1450	0.00	1430	0.00	1410	0.00
1430	0.00	1410	0.00	1390	0.00
1410	0.00	1390	0.00	1370	0.00
1390	0.00	1370	0.00	1350	0.00
1350	0.00	1330	0.00	1310	0.00
1330	0.00	1310	0.00	1290	0.00
1310	0.00	1290	0.00	1270	0.00
1290	0.00	1270	0.00	1250	0.00
1270	0.00	1250	0.00	1230	0.00
1250	0.00	1230	0.00	1210	0.00
1230	0.00	1210	0.00	1190	0.00
1210	0.00	1190	0.00	1170	0.00
1190	0.00	1170	0.00	1150	0.00
1150	0.00	1130	0.00	1110	0.00
1130	0.00	1110	0.00	1090	0.00
1110	0.00	1090	0.00	1070	0.00
1090	0.00	1070	0.00	1050	0.00
1070	0.00	1050	0.00	1030	0.00
1050	0.00	1030	0.00	1010	0.00
1030	0.00	1010	0.00	990	0.00
1010	0.00	990	0.00	970	0.00
990	0.00	970	0.00	950	0.00
970	0.00	950	0.00	930	0.00
950	0.00	930	0.00	910	0.00
930	0.00	910	0.00	890	0.00
910	0.00	890	0.00	870	0.00
890	0.00	870	0.00	850	0.00
870	0.00	850	0.00	830	0.00
850	0.00	830	0.00	810	0.00
830	0.00	810	0.00	790	0.00
810	0.00	790	0.00	770	0.00
790	0.00	770	0.00	750	0.00
770	0.00	750	0.00	730	0.00
750	0.00	730	0.00	710	0.00
730	0.00	710	0.00	690	0.00
710	0.00	690	0.00	670	0.00
690	0.00	670	0.00	650	0.00
670	0.00	650	0.00	630	0.00
650	0.00	630	0.00	610	0.00
630	0.00	610	0.00	590	0.00
610	0.00	590	0.00	570	0.00
590	0.00	570	0.00	550	0.00
570	0.00	550	0.00	530	0.00
550	0.00	530	0.00	510	0.00
530	0.00	510	0.00	490	0.00
510	0.00	490	0.00	470	0.00
490	0.00	470	0.00	450	0.00
470	0.00	450	0.00	430	0.00
450	0.00	430	0.00	410	0.00
430	0.00	410	0.00	390	0.00
410	0.00	390	0.00	370	0.00
390	0.00	370	0.00	350	0.00
370	0.00	350	0.00	330	0.00
350	0.00	330	0.00	310	0.00
330	0.00	310	0.00	290	0.00
310	0.00	290	0.00	270	0.00
290	0.00	270	0.00	250	0.00
270	0.00	250	0.00	230	0.00
250	0.00	230	0.00	210	0.00
230	0.00	210	0.00	190	0.00
210	0.00	190	0.00	170	0.00
190	0.00	170	0.00	150	0.00
170	0.00	150	0.00	130	0.00
150	0.00	130	0.00	110	0.00
130	0.00	110	0.00	90	0.00
110	0.00	90	0.00	70	0.00
90	0.00	70	0.00	50	0.00
70	0.00	50	0.00	30	0.00
50	0.00	30	0.00	10	0.00
30	0.00	10	0.00	0	0.00

Polypropylene [PP], High Density Polyethylene [HDPE], Polyethylene (low density) [PE] and Polytetrafluoroethylene [PTFE]

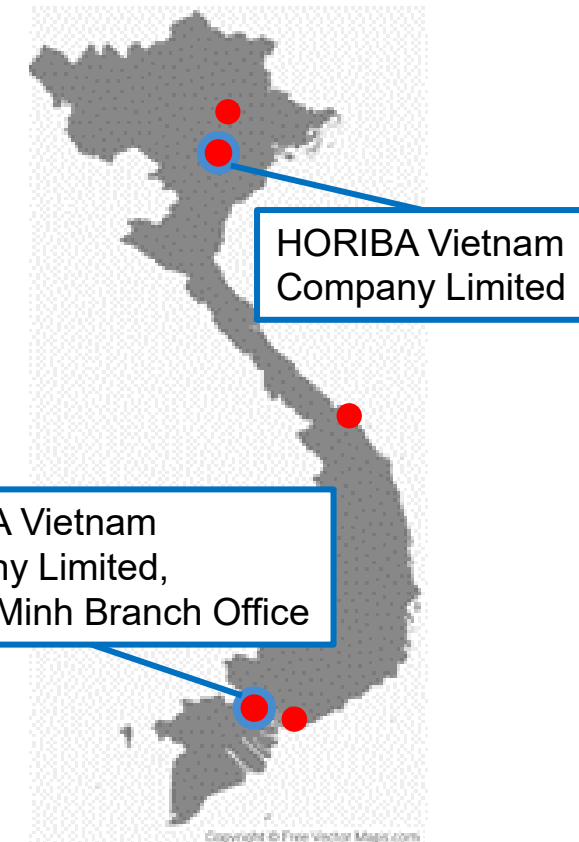
Conclusion

(*according to our research as of 2021/12/1)

- A full solution for MPs application has been developed by providing all the tools needed in a single bundle
- *431 hits on Google Scholar by searching “HORIBA Raman Microplastics”
- Our Raman is recognized worldwide and our users in Europe are also involved in the international framework by the Ministry of the Environment (Japan)
- Leading Raman market share in Vietnam’s research field
- HORIBA Vietnam can provide comprehensive application / service support

Raman Track Records in Vietnam		
City	Unit	Example of Institutions
Hanoi	12	<ul style="list-style-type: none"> • Institute for Materials Science, Institute of Physics • National University of Education, University of Science
Ho Chi Minh	6	<ul style="list-style-type: none"> • Vietnam National University Ho Chi Minh City – University of Social Sciences and Humanities
Danang	2	<ul style="list-style-type: none"> • University of Science and Education (University of Danang)
Thai Nguyen	1	<ul style="list-style-type: none"> • University of Science
Vung Tau	1	<ul style="list-style-type: none"> • University of Petroleum

*Institution where Raman is used for Microplastics



*Red Dots show where HORIBA Raman is used